FINAL
ENVIRONMENTAL IMPACT STATEMENT/ LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT FOR RENEWAL OF NAVAL AIR WEAPONS STATION CHINA LAKE PUBLIC LAND WITHDRAWAL

AUGUST 2015

U.S. DEPARTMENT OF THE NAVY
NAVAL AIR WEAPONS STATION CHINA LAKE
INYO, KERN, AND SAN BERNARDINO COUNTIES, CALIFORNIA

COVER SHEET
LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT
RENEWAL OF THE NAVAL AIR WEAPONS STATION CHINA LAKE LAND WITHDRAWAL

a. Responsible Agency: U.S. Department of the Navy (DoN)

b. *Cooperating Agencies*: Bureau of Land Management

c. *For Additional Information*: NAVFAC SW, c/o Teresa Bresler, 1220 Pacific Highway, San Diego, CA, 92132, (619) 532-4452.

d. *Designation:* Environmental Impact Statement/Legislative Environmental Impact Statement.

e. *Abstract*: This Environmental Impact Statement (EIS)/Legislative Environmental Impact Statement (LEIS) addresses the Navy's proposal to continue the withdrawal of the 1,044,126 acres (422,544 hectares) of public lands in Kern, Inyo, and San Bernardino counties to conduct research, development, acquisition, test and evaluation (RDAT&E) activities at Naval Air Weapons Station China Lake (NAWSCL). NAWSCL is located in the upper Mojave Desert of southeastern California and consists of two major land areas: the North Range and the South Range. NAWSCL provides a safe, operationally realistic, and thoroughly instrumented land range test and training environment that fulfills DoN and Department of Defense RDAT&E requirements. The Proposed Action includes (1) Congressional renewal of the land withdrawal; (2) revision and implementation of the Installation's Comprehensive Land Use Management Plan (CLUMP); and (3) accommodation of an increase (up to 25 percent increase) in RDAT&E and training activities, expansion of unmanned aerial and surface systems, and expansion of existing and introduction of evolving directed energy weapons development. The Baseline Alternative/Updated No Action Alternative includes (1) Congressional renewal of the land withdrawal; (2) revision and implementation of the CLUMP; and (3) continuation of RDAT&E and training activities at current levels. Under the No Action Alternative, the land withdrawal would expire with administrative control of the withdrawn land returning to the Bureau of Land Management (BLM). With the President signing the Fiscal Year 2014 National Defense Authorization Act into law on December 26, 2013, the public land withdrawal at NAWSCL was reauthorized until 2039. However, the non-legislative components of the Proposed Action, which are identified in this Final EIS/LEIS as RDAT&E and training and the tempo of these activities, remain the subject of future DoN decision-making. Because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of "no action" conditions at NAWSCL. Therefore, for the purposes of the Final EIS/LEIS, the Baseline Alternative/Updated No Action Alternative is considered to effectively represent "no action" conditions or status quo. This alternative is defined as the continuation of military RDAT&E and training activities at NAWSCL at current levels. The discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed.

Potential environmental consequences are addressed for environmental resources identified during public and agency scoping. These resources are land use, noise, air quality, biological resources, cultural resources, geology and soils, water quality and hydrology, socioeconomics and environmental justice, utilities and public services, public health and safety, hazardous materials and waste, and traffic and circulation. Findings indicate either of the action alternatives would result in continuation of ground disturbance at target and test sites, and continuation of noise from aircraft and ground training. The majority of NAWSCL land is a buffer to protect both public safety and national security. The DoN's preferred alternative is the Proposed Action (including the up to 25 percent increase in operations tempo, as described above).

COVER SHEET
LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT
RENEWAL OF THE NAVAL AIR WEAPONS STATION CHINA LAKE LAND WITHDRAWAL

a. Responsible Agency: U.S. Department of the Navy (DoN)

b. *Cooperating Agencies*: Bureau of Land Management

c. *For Additional Information*: NAVFAC SW, c/o Gene Beale, 1220 Pacific Highway, San Diego, CA, 92132, (619) 532-1027.

d. *Designation:* Environmental Impact Statement/Legislative Environmental Impact Statement.

e. *Abstract*: This Environmental Impact Statement (EIS)/Legislative Environmental Impact Statement (LEIS) addresses the Navy's proposal to continue the withdrawal of the 1,044,126 acres (422,544 hectares) of public lands in Kern, Inyo, and San Bernardino counties to conduct research, development, acquisition, test and evaluation (RDAT&E) activities at Naval Air Weapons Station China Lake (NAWSCL). NAWSCL is located in the upper Mojave Desert of southeastern California and consists of two major land areas: the North Range and the South Range. NAWSCL provides a safe, operationally realistic, and thoroughly instrumented land range test and training environment that fulfills DoN and Department of Defense RDAT&E requirements. The Proposed Action includes (1) Congressional renewal of the land withdrawal; (2) revision and implementation of the Installation's Comprehensive Land Use Management Plan (CLUMP); and (3) accommodation of an increase (up to 25 percent increase) in RDAT&E and training activities, expansion of unmanned aerial and surface systems, and expansion of existing and introduction of evolving directed energy weapons development. The Baseline Alternative/Updated No Action Alternative includes (1) Congressional renewal of the land withdrawal; (2) revision and implementation of the CLUMP; and (3) continuation of RDAT&E and training activities at current levels. Under the No Action Alternative, the land withdrawal would expire with administrative control of the withdrawn land returning to the Bureau of Land Management (BLM). With the President signing the Fiscal Year 2014 National Defense Authorization Act into law on December 26, 2013, the public land withdrawal at NAWSCL was reauthorized until 2039. However, the non-legislative components of the Proposed Action, which are identified in this Final EIS/LEIS as RDAT&E and training and the tempo of these activities, remain the subject of future DoN decision-making. Because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of "no action" conditions at NAWSCL. Therefore, for the purposes of the Final EIS/LEIS, the Baseline Alternative/Updated No Action Alternative is considered to effectively represent "no action" conditions or status quo. This alternative is defined as the continuation of military RDAT&E and training activities at NAWSCL at current levels. The discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed.

Potential environmental consequences are addressed for environmental resources identified during public and agency scoping. These resources are land use, noise, air quality, biological resources, cultural resources, geology and soils, water quality and hydrology, socioeconomics and environmental justice, utilities and public services, public health and safety, hazardous materials and waste, and traffic and circulation. Findings indicate either of the action alternatives would result in continuation of ground disturbance at target and test sites, and continuation of noise from aircraft and ground training. The majority of NAWSCL land is a buffer to protect both public safety and national security. The DoN's preferred alternative is the Proposed Action (including the up to 25 percent increase in operations tempo, as described above).

This page intentionally left blank.

TABLE OF CONTENTS

Section **Page**

EXECUTIVE SUMMARY ES-1

CHAPTER 1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION 1-1
1.1 Introduction 1-1
1.2 Purpose and Need 1-2
1.2.1 Land Withdrawal Renewal 1-2
1.2.2 CLUMP Update 1-5
1.2.3 Current and Evolving Military RDAT&E and Training 1-7
1.3 Overview of NAWSCL 1-8
1.4 Environmental Impact Analysis Process 1-9
1.4.1 EIS and LEIS 1-10
1.5 Related Environmental Documents 1-13
1.6 Public Involvement 1-15
1.6.1 Tribal Meetings 1-17
1.7 Public Comment Process 1-19
1.7.1 Changes from the Draft EIS/LEIS to the Final EIS/LEIS 1-19

CHAPTER 2.0 ALTERNATIVES, INCLUDING THE PROPOSED ACTION 2-1
2.1 Introduction 2-1
2.2 Development of Alternatives 2-2
2.2.1 Selection Criteria for Alternatives 2-2
2.2.2 Alternatives Considered but Not Carried Forward for Further Analysis 2-2
2.3 Alternatives 2-4
2.3.1 Proposed Action (Alternative 1) 2-5
2.3.2 Baseline Alternative/Updated No Action Alternative (Alternative 2) 2-30
2.3.3 No Action Alternative (Alternative 3) 2-36
2.4 Potential Cumulative Projects 2-37
2.5 Comparison of Alternatives 2-40

CHAPTER 3.0 AFFECTED ENVIRONMENT 3.0-1
3.1 Land Use 3.1-1
3.1.1 Region of Influence 3.1-1
3.1.2 Current Management Framework 3.1-1
3.1.3 On-Installation Land Ownership 3.1-3
3.1.4 On-Installation Land Use 3.1-3
3.1.5 Land Management Units 3.1-6
3.1.6 Military-Related Land Uses 3.1-6
3.1.7 On-Installation Nonmilitary Land Uses 3.1-14
3.1.8 Off-Installation Land Ownership 3.1-16
3.1.9 Off-Installation Land Use 3.1-16
3.2 Noise 3.2-1
3.2.1 Region of Influence 3.2-1
3.2.2 Fundamentals 3.2-1
3.2.3 Guidelines 3.2-3
3.2.4 Existing Conditions 3.2-5
3.3 Air Quality 3.3-1
3.3.1 Region of Influence 3.3-1
3.3.2 Definition of Resource 3.3-1

3.3.3 Regulatory Framework 3.3-3
3.3.4 Climate and Meteorology 3.3-13
3.3.5 Existing Air Emissions at NAWSCL 3.3-14
3.4 Biological Resources 3.4-1
3.4.1 Region of Influence 3.4-1
3.4.2 Special Status Species Categories 3.4-1
3.4.3 Regulatory Framework 3.4-3
3.4.4 Current Management Practices 3.4-5
3.4.5 Habitat Enhancement Efforts 3.4-6
3.4.6 Overview of Biological Resources 3.4-8
3.4.7 Federally Listed Threatened and Endangered Species 3.4-15
3.4.8 Riparian and Other Water-Related Habitats 3.4-23
3.4.9 Wild Horse and Burro Management 3.4-25
3.4.10 Fire Management 3.4-29
3.4.11 Target and Test Sites on NAWSCL 3.4-32
3.5 Cultural and Paleontological Resources 3.5-1
3.5.1 Region of Influence 3.5-1
3.5.2 Resource Types 3.5-1
3.5.3 Regulatory Framework 3.5-6
3.5.4 Current Management Practices 3.5-9
3.5.5 Description of Cultural Resources 3.5-12
3.5.6 Cultural and Paleontological Resources and Existing Land Disturbance Patterns at Target and Test Areas 3.5-17
3.6 Geology and Soils 3.6-1
3.6.1 Region of Influence 3.6-1
3.6.2 Regulatory Framework 3.6-1
3.6.3 Physiography 3.6-1
3.6.4 Soils 3.6-4
3.6.5 Seismicity and Seismic Hazards 3.6-12
3.6.6 Minerals Exploration 3.6-12
3.6.7 Thermal Activity in the Coso Range 3.6-13
3.7 Water Quality and Hydrology 3.7-1
3.7.1 Region of Influence 3.7-1
3.7.2 Regulatory Framework 3.7-1
3.7.3 Surface Water Resources 3.7-5
3.7.4 Groundwater 3.7-13
3.8 Socioeconomics 3.8-1
3.8.1 Region of Influence 3.8-1
3.8.2 Population 3.8-1
3.8.3 Housing 3.8-2
3.8.4 Employment, Income, and Economic Activity 3.8-9
3.8.5 Environmental Justice 3.8-14
3.9 Utilities and Public Services 3.9-1
3.9.1 Region of Influence 3.9-1
3.9.2 Current Management Practices 3.9-1
3.9.3 Utilities 3.9-1
3.9.4 Energy Efficiency and Renewable Energy Initiatives 3.9-4
3.9.5 Public Services 3.9-6
3.10 Public Health and Safety 3.10-1
3.10.1 Region of Influence 3.10-1
3.10.2 Range Safety 3.10-1
3.10.3 Target and Test Sites 3.10-3
3.10.4 Airspace and Flight Safety 3.10-3
3.10.5 Airfield Flight Safety 3.10-5
3.10.6 Bird-Aircraft Strike Hazards 3.10-7
3.10.7 Explosive Safety 3.10-7

3.10.8 Electromagnetic Frequency Events 3.10-7
3.10.9 Tomography Activities 3.10-15
3.10.10 Laser Activities 3.10-16
3.10.11 Munitions Use 3.10-18
3.11 Hazardous Materials and Wastes 3.11-1
3.11.1 Region of Influence 3.11-1
3.11.2 Regulatory Framework 3.11-1
3.11.3 Installation Restoration and Military Munitions Response Program 3.11-5
3.11.4 Management Practices 3.11-5
3.12 Traffic and Circulation 3.12-1
3.12.1 Region of Influence 3.12-1
3.12.2 Planning and Management Practices 3.12-1
3.12.3 Key Regional Roads and NAWSCL Access 3.12-1
3.12.4 NAWSCL Access 3.12-4
3.12.5 Existing Roadway Operating Conditions 3.12-7
3.12.6 Intersection Operating Conditions 3.12-8
3.12.7 Transit and Rail Systems 3.12-10

CHAPTER 4.0 ENVIRONMENTAL CONSEQUENCES 4.0-1
4.1 Land Use 4.1-1
4.1.1 Approach to Analysis 4.1-1
4.1.2 Proposed Action (Alternative 1) 4.1-1
4.1.3 Baseline Alternative/Updated No Action Alternative (Alternative 2) 4.1-7
4.1.4 No Action Alternative (Alternative 3) 4.1-12
4.2 Noise 4.2-1
4.2.1 Approach to Analysis 4.2-1
4.2.2 Proposed Action (Alternative 1) 4.2-2
4.2.3 Baseline Alternative/Updated No Action Alternative (Alternative 2) 4.2-11
4.2.4 No Action Alternative (Alternative 3) 4.2-15
4.3 Air Quality 4.3-1
4.3.1 Approach to Emissions Analysis 4.3-1
4.3.2 Determination of Emissions Impact Significance 4.3-3
4.3.3 Proposed Action (Alternative 1) 4.3-5
4.3.4 Baseline Alternative/Updated No Action Alternative (Alternative 2) 4.3-9
4.3.5 No Action Alternative (Alternative 3) 4.3-12
4.4 Biological Resources 4.4-1
4.4.1 Approach to Analysis 4.4-1
4.4.2 Proposed Action (Alternative 1) 4.4-3
4.4.3 Baseline Alternative/Updated No Action Alternative (Alternative 2) 4.4-39
4.4.4 No Action Alternative (Alternative 3) 4.4-61
4.5 Cultural and Paleontological Resources 4.5-1
4.5.1 Approach to Analysis 4.5-1
4.5.2 Proposed Action (Alternative 1) 4.5-2
4.5.3 Baseline Alternative/Updated No Action Alternative (Alternative 2) 4.5-15
4.5.4 No Action Alternative (Alternative 3) 4.5-24
4.6 Geology and Soils 4.6-1
4.6.1 Approach to Analysis 4.6-1
4.6.2 Proposed Action (Alternative 1) 4.6-1
4.6.3 Baseline Alternative/Updated No Action Alternative (Alternative 2) 4.6-4
4.6.4 No Action Alternative (Alternative 3) 4.6-8
4.7 Water Quality and Hydrology 4.7-1
4.7.1 Approach to Analysis 4.7-1
4.7.2 Proposed Action (Alternative 1) 4.7-1
4.7.3 Baseline Alternative/Updated No Action Alternative (Alternative 2) 4.7-8
4.7.4 No Action Alternative (Alternative 3) 4.7-14
4.8 Socioeconomics 4.8-1

4.8.1 Approach to Analysis 4.8-1
4.8.2 Proposed Action (Alternative 1) 4.8-1
4.8.3 Baseline Alternative/Updated No Action Alternative (Alternative 2) 4.8-3
4.8.4 No Action Alternative (Alternative 3) 4.8-6
4.8.5 Environmental Justice 4.8-6
4.9 Utilities and Public Services 4.9-1
4.9.1 Approach to Analysis 4.9-1
4.9.2 Proposed Action (Alternative 1) 4.9-1
4.9.3 Baseline Alternative/Updated No Action Alternative (Alternative 2) 4.9-4
4.9.4 No Action Alternative (Alternative 3) 4.9-6
4.10 Public Health and Safety 4.10-1
4.10.1 Approach to Analysis 4.10-1
4.10.2 Proposed Action (Alternative 1) 4.10-1
4.10.3 Baseline Alternative/Updated No Action Alternative (Alternative 2) 4.10-6
4.10.4 No Action Alternative (Alternative 3) 4.10-13
4.11 Hazardous Materials and Wastes 4.11-1
4.11.1 Approach to Analysis 4.11-1
4.11.2 Proposed Action (Alternative 1) 4.11-1
4.11.3 Baseline Alternative/Updated No Action Alternative (Alternative 2) 4.11-7
4.11.4 No Action Alternative (Alternative 3) 4.11-11
4.12 Traffic and Circulation 4.12-1
4.12.1 Approach to Analysis 4.12-1
4.12.2 Proposed Action (Alternative 1) 4.12-1
4.12.3 Baseline Alternative/Updated No Action Alternative (Alternative 2) 4.12-6
4.12.4 No Action Alternative (Alternative 3) 4.12-10

CHAPTER 5.0 OTHER NEPA CONSIDERATIONS 5-1
5.1 Irreversible or Irretrievable Commitment of Resources 5-1
5.2 Relationship Between Short-Term Uses and Long-Term Productivity 5-1
5.3 Unavoidable Adverse Effects 5-2
5.4 Energy Requirements and Conservation Potential of the Proposed Action and Alternatives 5-2

CHAPTER 6.0 REFERENCES 6-1

CHAPTER 7.0 AGENCIES AND REPRESENTATIVES CONTACTED 7-1

CHAPTER 8.0 LIST OF PREPARERS AND CONTRIBUTORS 8-1

CHAPTER 9.0 DISTRIBUTION LIST 9-1

CHAPTER 10.0 PUBLIC COMMENT AND RESPONSE 10-1
10.1 Organization 10-1

CHAPTER 11.0 GLOSSARY 11-1

CHAPTER 12.0 INDEX 12-1

APPENDICES

A Notice of Intent
B Naval Air Warfare Center Weapons Division Operational Requirements Document
C Draft Comprehensive Land Use Management Plan (CLUMP)
D Biological Resources
E Hazardous Materials Tables
F Modeled Weapon Expenditure Data
G Air Quality Emissions Analysis
H Agency Coordination/Consultation
I Noise
J Biological Opinion
K Programmatic Agreement

LIST OF FIGURES

Figure		Page
Figure 1-1	Naval Air Weapons Station China Lake and Vicinity	1-3
Figure 1-2	North Range NAWSCL	1-11
Figure 1-3	South Range NAWSCL	1-12
Figure 2-1	Typical Air-to-Air Scenario	2-7
Figure 2-2	Typical Surface-to-Air Scenario	2-8
Figure 2-3	Typical Air-to-Ground Scenario	2-9
Figure 2-4	Typical Surface-to-Surface Scenario	2-10
Figure 2-5	Typical Air-to-Air HEL Scenario	2-13
Figure 2-6	Typical Surface-to-Air HEL Scenario	2-13
Figure 2-7	Typical Air-to-Air HPM Scenario	2-14
Figure 2-8	Typical Air-to-Surface HPM Scenario	2-14
Figure 2-9	Typical Surface-to-Surface HPM Scenario	2-15
Figure 2-10	Typical Target Penetration Scenario	2-16
Figure 2-11	Typical Ejection Systems Scenario	2-17
Figure 2-12	Proposed Action Military Land Uses, North Range	2-18
Figure 2-13	Proposed Action Military Land Uses, South Range	2-19
Figure 2-14	Proposed Action, Non-Military Land Uses, North Range	2-28
Figure 2-15	Baseline Alternative/Updated No Action Alternative Military Land Uses, North Range	2-31
Figure 2-16	Baseline Alternative/Updated No Action Alternative Military Land Uses, South Range	2-32
Figure 3.1-1	On-Installation Land Ownership North Range	3.1-4
Figure 3.1-2	On-Installation Land Ownership South Range	3.1-5
Figure 3.1-3	Land Use Management Units North Range	3.1-7
Figure 3.1-4	Land Use Management Units South Range	3.1-8
Figure 3.1-5	Off-Installation Land Status North Range	3.1-17
Figure 3.1-6	Off-Installation Land Status South Range	3.1-18
Figure 3.2-1	Typical Sound Pressure Levels	3.2-2
Figure 3.2-2	Existing NAWSCL Aircraft Noise Contours	3.2-7
Figure 3.2-3	Predicted Single Event SEL at 1,000 Feet (305 meters) Under Flight Path	3.2-12
Figure 3.2-4	Existing NAWSCL Large Weapon Noise Contours	3.2-15
Figure 3.2-5	Modeled Existing NAWSCL Large Weapon Firing and Target Positions	3.2-16
Figure 3.2-6	F/A-18 E/F Supersonic Flight Overpressure along Four Representative Flight Tracks	3.2-18
Figure 3.3-1	Great Basin Valleys and Mojave Desert Air Basins	3.3-7
Figure 3.3-2	PM_{10} Nonattainment and Maintenance Areas for the NAWSCL Vicinity	3.3-9
Figure 3.4-1	Plant Communities on North Range	3.4-9
Figure 3.4-2	Plant Communities on South Range	3.4-10
Figure 3.4-3	Distribution of Mojave Tui Chub on NAWSCL	3.4-18
Figure 3.4-4	Estimated Desert Tortoise Habitat Areas and Densities, North Range	3.4-20

Figure 3.4-5 Estimated Desert Tortoise Habitat Areas, Densities, and Critical Habitat, South Range 3.4-21
Figure 3.4-6 Inyo California Towhee Distribution on NAWSCL and BLM Land 3.4-24
Figure 3.4-7 General Distribution of Feral Burros on NAWSCL 3.4-26
Figure 3.4-8 General Distribution of Feral Horses on NAWSCL, North Range 3.4-27
Figure 3.4-9 Estimated Desert Tortoise Habitat Areas with Target and Test Sites, North Range 3.4-34
Figure 3.4-10 Estimated Desert Tortoise Habitat Areas with Target and Test Sites, South Range 3.4-35
Figure 3.5-1 Known Cultural Resources, Districts, and Surveys, North Range 3.5-13
Figure 3.5-2 Known Cultural Resources, Districts, and Surveys, South Range 3.5-14
Figure 3.5-3 Historic Roads North Range 3.5-15
Figure 3.5-4 Historic Roads South Range 3.5-16
Figure 3.5-5 Cultural Resources Survey Areas at Airport Lake Targets 3.5-19
Figure 3.5-6 Cultural Resources Survey Areas at Coso North Targets 3.5-21
Figure 3.5-7 Cultural Resources Survey Areas at Superior Valley Targets 3.5-25
Figure 3.6-1 Topography, North Range 3.6-3
Figure 3.6-2 Topography, South Range 3.6-5
Figure 3.6-3 Soil Classifications North Range 3.6-7
Figure 3.6-4 Soil Classifications South Range 3.6-8
Figure 3.6-5 Tectonic Map of NAWSCL and Vicinity 3.6-11
Figure 3.6-6 Coso KGRA Hydrothermal/Thermal Surface Features 3.6-14
Figure 3.6-7 Coso Geothermal Area and Well Pads 3.6-16
Figure 3.6-8 Coso Known Geothermal Resource Area Contracts and Leases 3.6-17
Figure 3.7-1 Watershed Boundaries North Range 3.7-6
Figure 3.7-2 Watershed Boundaries South Range 3.7-7
Figure 3.7-3 Watersheds and Floodplain Designations North Range 3.7-10
Figure 3.7-4 NAWSCL Springs 3.7-11
Figure 3.7-5 Watersheds and Floodplain Designations South Range 3.7-14
Figure 3.8-1 Total Minority Percentage NAWSCL 3.8-16
Figure 3.8-2 Percentage of Low-Income Residents NAWSCL 3.8-21
Figure 3.8-3 Percentage of Children NAWSCL 3.8-23
Figure 3.10-1 Existing Clear Zones and Setback Areas for Armitage Airfield 3.10-6
Figure 3.10-2 Explosive Safety Quantity Distance (ESQD) Arcs, North Range 3.10-8
Figure 3.10-3 Explosive Safety Quantity Distance (ESQD) Arcs, South Range 3.10-9
Figure 3.10-4 Radiation Hazards to Ordnance and Personnel 3.10-11
Figure 3.10-5 Lower Frequency Hazards of Electromagnetic Radiation to Personnel (HERP) 3.10-12
Figure 3.10-6 Hazards of Electromagnetic Radiation to Personnel (HERP) Limits 3.10-14
Figure 3.12-1 Key Regional Roads 3.12-2
Figure 3.12-2 Key Local Roads on Mainsite Portion of North Range 3.12-5
Figure 3.12-3 Key Local Roads on Central and Western Portion of South Range 3.12-6
Figure 4.2-1 Proposed Action and Baseline Alternative/Updated No Action Alternative Aircraft CNEL Contours at NAWSCL 4.2-4
Figure 4.2-2 Proposed Action NAWSCL Large Weapon Noise Contours 4.2-8
Figure 4.8-1 Census Tracts and Noise Contours for the Proposed Action and Baseline Alternative/Updated No Action Alternative 4.8-10

LIST OF TABLES

Table **Page**

Table ES-1 Comparison of Annual RDAT&E and Training Events for the Alternatives ES-8
Table ES-2 Summary of Influencing Factors and Environmental Impacts ES-13
Table ES-3 Mitigation Identification and Implementation ES-29
Table 1-1 NAWSCL Organizations, Functions, and Missions 1-4
Table 1-2 EIS/LEIS Decision Summary 1-13
Table 2-1 Crosswalk of EIS/LEIS Areas of Analysis to Mission Areas 2-20
Table 2-2 Comparison of RDAT&E and Training Events for the Alternatives 2-42
Table 2-3 Summary of Influencing Factors and Environmental Impacts 2-48
Table 3.1-1 Lands Acquired by Lease, Easement, or Permit for DoN Use 3.1-3
Table 3.1-2 Land Management Units 3.1-9
Table 3.1-3 Bureau of Land Management Wilderness Areas Near NAWSCL 3.1-20
Table 3.2-1 Decibel Changes and Loudness 3.2-1
Table 3.2-2 DoN Land Use Compatible Guidelines 3.2-4
Table 3.2-3 Army Land Use Planning Guides 3.2-5
Table 3.2-4 Area and Population under Existing Condition Noise Contours 3.2-8
Table 3.2-5 2004 Condition CNEL for Individual Ranges 3.2-11
Table 3.2-6 Noise Complaints 3.2-13
Table 3.3-1 National and California Ambient Air Quality Standards 3.3-6
Table 3.3-2 NAWSCL Federal Nonattainment and Attainment/Maintenance Areas 3.3-8
Table 3.3-3 Ambient Air Quality Monitoring Stations Summary 3.3-10
Table 3.3-4 Applicable *de minimis* Levels for NAWSCL Federal Nonattainment and Attainment/Maintenance Areas 3.3-12
Table 3.3-5 Baseline Emissions at NAWSCL 3.3-16
Table 3.4-1 Plant Communities on NAWSCL 3.4-11
Table 3.4-2 Federally and State Listed Threatened and Endangered Wildlife Species on NAWSCL 3.4-16
Table 3.4-3 Fire Occurrences on NAWSCL from 1998 to 2012 ..... 3.4-30
Table 3.6-1 Selected Soil Characteristics 3.6-9
Table 3.8-1 Population Trends, 2000 and 2010 Estimates 3.8-2
Table 3.8-2 Study Area Race, Ethnicity, and Total Minority, 2010 Estimates 3.8-3
Table 3.8-3 Housing Units and Housing Tenure, 2000 and 2010 Estimates 3.8-8
Table 3.8-4 Household Size by Housing Type, 2010 Estimates 3.8-8
Table 3.8-5 Labor Force and Unemployment, 2000 and 2010 Estimates 3.8-10
Table 3.8-6 Employment by Occupation, 2010 Estimates 3.8-12
Table 3.8-7 Per Capita and Median Household Income, 2010 Estimates 3.8-13
Table 3.8-8 Economic Impact of NAWSCL, Fiscal Year 2009 ..... 3.8-14
Table 3.8-9 Poverty Ratios, 2010 Estimates 3.8-17
Table 3.8-10 Child Population, 2010 Estimates 3.8-24
Table 3.10-1 Specific Absorption Rates 3.10-10
Table 3.10-2 Power Density Conversion Table for Free-Space Far-Field Conditions 3.10-15
Table 3.11-1 Typical Annual Recycling Statistics 3.11-10

Table 3.12-1 Levels of Service 3.12-8
Table 3.12-2 Existing Traffic Volumes and LOS on Key Roads 3.12-9
Table 3.12-3 Unsignalized Intersection Levels of Service 3.12-10
Table 3.12-4 Existing Intersection Levels of Service 3.12-11
Table 4.1-1 Proposed Action (Alternative 1) - Summary of Land Use Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.1-7
Table 4.1-2 Baseline Alternative/Updated No Action Alternative (Alternative 2) - Summary of Land Use Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.1-13
Table 4.2-1 Area and Population under Proposed Action (Alternative 1) Noise Contours 4.2-5
Table 4.2-2 Change in Area from Existing Condition Noise Contours (acres) 4.2-6
Table 4.2-3 Proposed Action (Alternative 1) – Summary of Noise Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.2-12
Table 4.2-4 Baseline Alternative/Updated No Action Alternative (Alternative 2) – Summary of Noise Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.2-16
Table 4.3-1 Annual Air Emissions for the Proposed Action (Alternative 1) 4.3-2
Table 4.3-2 Cumulative Greenhouse Gas Emissions 4.3-8
Table 4.3-3 Proposed Action (Alternative 1) – Summary of Air Quality Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.3-10
Table 4.3-4 Baseline Alternative/Updated No Action Alternative (Alternative 2) – Summary of Air Quality Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.3-13
Table 4.4-1 Types and Quantity of Incidental Take for the Desert Tortoise 4.4-7
Table 4.4-2 Proposed Action (Alternative 1) - Summary of Biological Resources Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.4-40
Table 4.4-3 Baseline Alternative/Updated No Action Alternative (Alternative 2) - Summary of Biological Resources Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.4-63
Table 4.5-1 Proposed Action (Alternative 1) – Summary of Cultural Resources Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.5-16
Table 4.5-2 Baseline Alternative/Updated No Action Alternative (Alternative 2) - Summary of Cultural Resources Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.5-25
Table 4.6-1 Proposed Action (Alternative 1) - Summary of Geology and Soils Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.6-5
Table 4.6-2 Baseline Alternative/Updated No Action Alternative (Alternative 2) - Summary of Geology and Soils Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.6-8
Table 4.7-1 Proposed Action (Alternative 1) – Summary of Water Quality and Hydrology Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.7-9
Table 4.7-2 Baseline Alternative/Updated No Action Alternative (Alternative 2) – Summary of Water Quality and Hydrology Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.7-15
Table 4.8-1 Proposed Action (Alternative 1) – Summary of Socioeconomics Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.8-4
Table 4.8-2 Baseline Alternative/Updated No Action Alternative (Alternative 2) – Summary of Socioeconomics Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.8-7
Table 4.9-1 Proposed Action (Alternative 1) – Summary of Utilities and Public Services Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.9-4

Table 4.9-2 Baseline Alternative/Updated No Action Alternative (Alternative 2) – Summary of Utilities and Public Services Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.9-7
Table 4.10-1 Proposed Action (Alternative 1) – Summary of Public Health and Safety Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.10-7
Table 4.10-2 Baseline Alternative/Updated No Action Alternative (Alternative 2) – Summary of Public Health and Safety Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.10-14
Table 4.11-1 Proposed Action (Alternative 1) – Summary of Hazardous Materials and Wastes Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.11-6
Table 4.11-2 Baseline Alternative/Updated No Action Alternative (Alternative 2) – Summary of Hazardous Materials and Wastes Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.11-12
Table 4.12-1 Proposed Action (Alternative 1) and Baseline Alternative/Updated No Action Alternative (Alternative 2) Level of Service Summary 4.12-3
Table 4.12-2 Proposed Action (Alternative 1) – Summary of Traffic and Circulation Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.12-6
Table 4.12-3 Baseline Alternative/Updated No Action Alternative (Alternative 2) – Summary of Traffic and Circulation Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures 4.12-10
Table 10.1-1 Index of Commenters 10-2
Table 10.1-2 Comment Response Matrix 10-5

ACRONYMS AND ABBREVIATIONS

A	acquisition
A/m	amperes per meter
AADT	annual average daily traffic
ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing material
ADNL	A-weighted DNL
AESO	Aircraft Environmental Support Office
AICUZ	Air Installation Compatible Use Zone
AIRFA	American Indian Religious Freedom Act
AML	appropriate management level
AMSL	above mean sea level
ANSI	American National Standards Institute
AOC	Area of Concern
APCD	Air Pollution Control District
APE	area of potential effects
APZ	Accident Potential Zone
AQMD	Air Quality Management District
ARPA	Archaeological Resources Protection Act
AST	aboveground storage tank
ATV	all-terrain vehicle
BA	Biological Assessment
BASH	Bird Aircraft Strike Hazard
BLM	Bureau of Land Management
BMP	best management practice
BNOISE	Blast Noise Prediction
BO	Biological Opinion
BOSC	Base Operations and Support Contract
BSO	building, structure, or object
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAAQS	California Ambient Air Quality Standards
Cal/EPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CDCAP	California Desert Conservation Area Plan
CDNL	C-weighted DNL
CDP	Census-designated place
CDPA	California Desert Protection Act
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
C-4	composition 4 explosive
CH&SC	California Health and Safety Code
CH_4	methane
CIED	counter improvised explosive device
CIP	Capital Improvement Program
CLFD	China Lake Federal Fire Department
CLPD	China Lake Police and Security Division
CLUMP	Comprehensive Land Use Management Plan

CMA	Cooperative Management Agreement
CNDDB	California Natural Diversity Data Base
CNEL	community noise equivalent level
CNIC	Commander, Navy Installations Command
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
COG	Council of Governments
CRPM	Cultural Resources Program Manager
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
dBC	C-weighted decibel
dBP	peak sound level
DCSD	Darwin Community Services District
DE	directed energy
DERP	Defense Environmental Restoration Program
DNL	day-night sound level
DoD	Department of Defense
DODINST	DoD Instruction
DoI	Department of the Interior
DoN	Department of the Navy
DTSC	Department of Toxic Substances Control
DWMA	Desert Wildlife Management Areas
EA	Environmental Assessment
EC	Environmental Coordinator
ECR	Electronic Combat Range
EDD	Employment Development Department
EDMS	Emissions and Dispersion Modeling System
EIS	Environmental Impact Statement
EM	electromagnetic
EMD	Environmental Management Division
EMR	electromagnetic radiation
EO	Executive Order
EOD	Explosive Ordnance Disposal
EPCRA	Emergency Planning and Community Right to Know Act
ESA	Endangered Species Act
ESQD	explosive safety quantity distance
EW	electronic warfare
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FLPMA	Federal Land Policy and Management Act
FMP	Fire Management Plan
FY	fiscal year
GBVAB	Great Basin Valleys Air Basin
GHG	greenhouse gas
GHz	gigahertz
GIS	geographic information system
GPS	global positioning system
GSE	ground support equipment
GTT	ground troop training
GWP	global warming potential
H_2S	hydrogen sulfide
HA	Hydrological Area

HABR	High Altitude Bombing Range
HAP	hazardous air pollutant
HARP	California Hotspots Analysis Reporting Program
HE	high explosive
HEL	high-energy laser
HERF	Hazards of Electromagnetic Radiation to Fuel
HERO	Hazards of Electromagnetic Radiation to Ordnance
HERP	Hazards of Electromagnetic Radiation to Personnel
HFC	hydrofluorocarbon
HGLA	Haiwee Geothermal Leasing Area
HPM	high-powered microwave
HSWA	Hazardous and Solid Waste Amendments
HU	Hydrological Unit
HWSTF	Hazardous Waste Storage & Transfer Facility
ICNIRP	International Commission on Non-Ionizing Radiation Protection
ICRMP	Integrated Cultural Resources Management Plan
IEEE	Institute of Electrical and Electronics Engineers
IEPM	Installation Environmental Program Manager
INRMP	Integrated Natural Resources Management Plan
IRP	Installation Restoration Program
IWV	Indian Wells Valley
IWVCGTAC	Indian Wells Valley Cooperative Groundwater Technical Advisory Committee
IWVWD	Indian Wells Valley Water District
IWW	industrial wastewater
JCIF	Joint Counter IED Facility
KCFD	Kern County Fire Department
KGRA	Known Geothermal Resource Area
kHz	kilohertz
kph	kilometers per hour
kV	kilovolt
kV/m	kilovolts per meter
kVA	kilovolt ampere
LEIS	Legislative Environmental Impact Statement
LFT&E	Live Fire Test and Evaluation
LMU	land management unit
LOS	level of service
MBTA	Migratory Bird Treaty Act
MCL	maximum contaminant level
MDAB	Mojave Desert Air Basin
MFSO	Missile Flight Safety Officer
mgd	million gallons per day
MHz	megahertz
MILCON	military construction
MIL-STD	military standard
mld	million liters per day
mm	millimeter
MMR	Military Munitions Rule
MMRP	Military Munitions Response Program
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
mph	miles per hour
MPPEH	material potentially presenting an explosive hazard
MRIP	Munitions Rule Implementation Policy
MSDS	Material Safety Data Sheet
MW	megawatt
NAAQS	National Ambient Air Quality Standards

NAGPRA	Native American Graves Protection and Repatriation Act
NASA	National Aeronautics and Space Administration
National Register	National Register of Historic Places
NATOPS	Naval Air Training and Operating Procedures Standardization
NAVAIR	Naval Air Systems Command
NAVFAC	Naval Facilities Engineering Command
NAVSEA	Naval Sea Systems Command
NAWC	Naval Air Warfare Center
NAWCWD	Naval Air Warfare Center Weapons Division
NAWS	Naval Air Weapons Station
NAWSCL	Naval Air Weapons Station China Lake
NAWSINST	NAWS Instruction
NDAA	National Defense Authorization Act
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NEW	net explosive weight
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NLR	noise level reduction
NO_2	nitrogen dioxide
NOI	Notice of Intent
NOTAM	notice to airmen
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NSPS	New Source Performance Standards
NSR	New Source Review
NWC	Naval Weapons Center
OB/OD	Open Burn/Open Detonation
OHV	off-highway vehicle
OPLMA	Omnibus Public Lands Management Act
OPNAVINST	Chief of Naval Operations Instructions
ORD	Operational Requirements Document
ORV	off-road vehicle
OSHA	Occupational Safety and Health Administration
P.L.	Public Law
PA	Programmatic Agreement
PACT	Police and Community Together
PCB	polychlorinated biphenyl
PD	power density
PEL	permissible exposure limit
PFC	perfluorocarbon
PG&E	Pacific Gas & Electric
PM	particulate matter
$PM_{2.5}$	particulate matter equal to or smaller than 2.5 microns in diameter
PM_{10}	particulate matter equal to or smaller than 10 microns in diameter
PMOA	Programmatic Memorandum of Agreement
PPA	power purchase agreement
ppm	parts per million
PRPA	Paleontological Resources Preservation Act
PSD	Prevention of Significant Deterioration
psf	per square foot
psi	per square inch
R&D	research and development
RAICUZ	Range Air Installations Compatible Use Zones
RCC	Range Control Center

RCRA	Resource Conservation and Recovery Act
RDAT&E	research, development, acquisition, test, and evaluation
RF	radio frequency
RHA	Risk Hazard Assessment
RLSSO	Range Laser System Safety Officer
ROD	Record of Decision
ROI	Region of Influence
RPD	Ridgecrest Police Department
RSM	Range Safety Manual
RTIP	Regional Transportation Improvement Program
RWQCB	Regional Water Quality Control Board
SAM	surface-to-air missile
SARA	Superfund Amendment and Reauthorization Act
Seabee	U.S. Navy Construction Battalion
SEL	sound exposure level
SF_6	sulfur hexafluoride
SH	State Highway
SHPO	State Historic Preservation Officer
SIP	state implementation plan
SNORT	Supersonic Naval Ordnance Research Track
SO_2	sulfur dioxide
SO_4	sulfates
SOP	standard operating procedure
SR	State Route
SSUSD	Sierra Sands Unified School District
STIP	State Transportation Improvement Program
SVP	Society of Vertebrate Paleontology
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
T&E	test and evaluation
TCP	Traditional Cultural Property
TDS	total dissolved solids
TEU-1	Training and Evaluation Unit 1
TMDL	total maximum daily load
TNT	trinitrotoluene
tpy	tons per year
TSCA	Toxic Substances Control Act
U.S.C.	U.S. Code
UAS	unmanned aerial system
UAV	unmanned aerial vehicle
UGS	unmanned ground system
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
UXO	unexploded ordnance
VFR	Visual Flight Rules
VOC	volatile organic compounds
WDR	Waste Discharge Requirement
WHBMP	Wild Horse and Burro Management Program
WWII	World War II
WWTP	wastewater treatment plant
°F	degrees Fahrenheit
°C	degrees Centigrade

This page intentionally left blank.

EXECUTIVE SUMMARY

INTRODUCTION

This Environmental Impact Statement (EIS)/Legislative Environmental Impact Statement (LEIS) was prepared by the U.S. Department of the Navy (DoN) in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code [U.S.C.] § 4321 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (Title 40 Code of Federal Regulations [CFR] §§ 1500–1508), DoN Procedures for Implementing NEPA (32 CFR § 775), and the California Desert Protection Act (CDPA) of 1994 (16 U.S.C. § 410aaa et seq.). The DoN is the lead agency for preparation of the EIS/LEIS, with the U.S. Department of the Interior, Bureau of Land Management (BLM) as a cooperating agency.

BLM, in partnership with the DoN, requested Congress to renew for an additional 25 years the withdrawal of public lands currently being used at Naval Air Weapons Station China Lake (NAWSCL) for research, development, acquisition, test, and evaluation (RDAT&E) and training. This EIS/LEIS addresses the DoN's proposal to conduct the withdrawal of the 1,044,126 acres (422,544 hectares) of public lands now part of NAWSCL. These lands were formerly administered by BLM, but, pursuant to a Memorandum of Understanding between the DoN and BLM, administration of withdrawn lands was transferred to the DoN in 1994. The land withdrawal extension allows the DoN to continue defense-related RDAT&E and other land uses at NAWSCL. Any land use changes that would result from a decision to accommodate an increase in military RDAT&E and training events would be incorporated in the update to the 2005 NAWSCL Comprehensive Land Use Management Plan (CLUMP).

PURPOSE AND NEED

Purpose

The legislative land withdrawal of 1,044,126 acres (422,544 hectares) from BLM to the DoN was scheduled to expire, as specified by the CDPA, on October 31, 2014. Due to the continued DoN need for the withdrawn lands at NAWSCL, the DoN, in cooperation with BLM, prepared a Draft EIS/LEIS and requested that Congress reauthorize the land withdrawal in the fiscal year (FY) 2014 National Defense Authorization Act (NDAA) to allow for continued RDAT&E and training. The FY 2014 NDAA was signed into law by the President on December 26, 2013 authorizing the land withdrawal reauthorization until 2039. This EIS/LEIS was prepared to satisfy Congressional requirements pertaining to the reauthorization of the public land withdrawal.

The purpose of the Proposed Action (Alternative 1) is to retain a military range for RDAT&E and training activities for a period of 25 years. The Proposed Action would meet the need to support the application of current and evolving technology to solve theatre-relevant problems for the war fighter, ensure necessary training readiness, and ensure appropriate management of land use and environmental resources. The purpose of the Proposed Action is also to revise and implement the Installation's CLUMP and maintain DoN readiness by accommodating current and evolving state-of-the-art RDAT&E and training requirements at NAWSCL.

Need

RDAT&E activities are needed to develop new weapons systems and ensure that weapons systems reliably perform to their designed specifications. In accomplishing this goal, NAWSCL provides a safe, operationally realistic, and thoroughly instrumented land range test and training environment that fulfills DoN and Department of Defense (DoD) RDAT&E requirements. The combination of the NAWSCL location, complex and varied terrain, widespread instrumentation sites, unique test capabilities, and highly skilled technical workforce provides the most advanced and efficient method of conducting critical RDAT&E necessary to maintain technical standards in the interest of national defense.

The DoN recognizes that the diverse and well-equipped assets at NAWSCL are needed to support military readiness. The DoN also recognizes that the requirement for training in all aspects of weapons delivery continues to grow and that testing and training airspace (e.g., the R-2508 Airspace Complex) and NAWSCL ranges are critical to military readiness. NAWSCL is the DoN's designated singular center for weapons and armament RDAT&E.

EIS/LEIS

This EIS/LEIS informs two separate decisions made by two separate decision-making bodies. The LEIS serves as the detailed statement required by the CDPA to be provided to Congress in conjunction with any subsequent request by the Navy to renew all or part of the CDPA-established withdrawal of public lands for the benefit of NAWSCL. The Draft LEIS was published on August 10, 2012 meeting the mandated publication date of October 31, 2012 and supported Congressional action on the reauthorization of the NAWSCL public land withdrawal.

The EIS/LEIS also serves as the environmental impact analysis that informs the DoN decision making on whether to increase RDAT&E and training tempo by up to 25 percent (Proposed Action) or to maintain current mission levels and tempos (Baseline Alternative/Updated No Action Alternative). The DoN would also decide on implementation of the updated CLUMP. BLM's involvement as a cooperating agency in the development of this EIS/LEIS was triggered by its current jurisdiction by law of, and special expertise with respect to, the lands previously withdrawn for NAWSCL; its receipt of a public lands withdrawal application; and its procedural responsibilities under Section 204 of the Federal Land Policy and Management Act (FLPMA) of 1976 (43 U.S.C. § 1701 et seq.). In accordance with the Engle Act of 1958 (Public Law 85-337) and the FLPMA, the DoN is required to file an application with BLM requesting the Secretary of the Interior to process a proposed legislative withdrawal and reservation of public land to continue military RDAT&E and training activities on the NAWSCL ranges.

A Notice of Intent to prepare this EIS/LEIS was published in the Federal Register on June 10, 2011 and a Notice of Availability (NOA) of the Draft EIS/LEIS was published on August 10, 2012. The public was notified through local media, and letters were sent to federal, state, and local agencies and officials; Native American tribes; and interested groups and individuals. Three public meetings were held to provide information to the public and solicit their comments and concerns. Verbal and written comments were used to help determine the scope and direction of studies/analysis in this EIS/LEIS.

DEVELOPMENT OF ALTERNATIVES

The alternatives in this EIS/LEIS were developed using the following considerations:

- Assessment of the current and projected needs for future military land use and military airspace use at NAWSCL;

- Consideration of limited nonmilitary uses that are compatible with military RDAT&E and training events and the DoN's stewardship goals for natural and cultural resources, and that do not create a fiscal, compliance, security, or public health and safety risk;
- Identification of public concerns through a public scoping process and consideration of comments received during this process regarding land withdrawal, land management, and environmental resources management; and
- Refinement of the process to accommodate the needs of evolving RDAT&E and training technologies.

SELECTION CRITERIA FOR ALTERNATIVES

Consistent with the purpose and need identified in Chapter 1, selection criteria were developed to help identify viable alternatives and eliminate unreasonable alternatives from further consideration. Selection criteria for this EIS/LEIS were as follows:

- Reasonable alternatives must fulfill the need for, and purpose of, the action; and
- Alternatives must be consistent with the goals, policies, and management strategy pertaining to use of the withdrawn land.

Alternatives that did not meet both of these criteria were not carried forward for further analysis in this EIS/LEIS. The DoN notes that, while a potential legislative transfer of currently withdrawn lands from BLM to the DoN would meet the DoN's purpose and need, this alternative has not been carried forward for full analysis since the environmental impacts associated with a transfer scenario would be largely indistinguishable from those associated with either the Proposed Action or the Baseline Alternative/Updated No Action Alternative (see Section 2.2.2.3).

DESCRIPTION OF THE PROPOSED ACTION (ALTERNATIVE 1)

The Proposed Action (Alternative 1) is the DoN's preferred alternative and would provide NAWSCL the greatest flexibility to accommodate current and evolving DoN and DoD readiness. This alternative was designed to be flexible enough to handle reasonably foreseeable increases in RDAT&E and training tempo. It includes Congressional renewal of the land withdrawal (25-year renewal), allows for the increase of RDAT&E and training tempo (up to 25 percent) within current land use areas approved for designated uses, expands unmanned aerial and surface systems, and provides expansion of existing and introduction of evolving directed energy (DE) weapons development. Nonmilitary activities would continue according to current patterns of use. Land use changes that may be proposed and potentially approved in the future would be accommodated in accordance with the CLUMP and applicable NAWSCL approval processes. Natural and cultural resources would continue to be conserved with implementation of the CLUMP management process. Key components of the Proposed Action are described in the following sections.

Land Withdrawal

The Proposed Action continues the existing withdrawal of 1,044,126 acres (422,544 hectares) of public land in Kern, Inyo, and San Bernardino counties for military use for a term of 25 years. The land withdrawal extension allows the DoN to continue defense-related RDAT&E and training and other land uses at NAWSCL. The withdrawals and reservations established by the CDPA, including the withdrawal for NAWSCL, were scheduled to expire on October 31, 2014. Congress reauthorized the land withdrawal in the FY 2014 NDAA to allow for continued RDAT&E and training. The FY 2014 NDAA was signed into

law by the President on December 26, 2013, reauthorizing the NAWSCL land withdrawal until 2039.Military Uses

RDAT&E and training events at NAWSCL generally fall into one of seven major mission areas: (1) air-to-air, (2) surface-to-air, (3) air-to-ground, (4) surface-to-surface, (5) energetics/munitions, (6) electromagnetics (including DE), and (7) track test. Additional Fleet and DoD training events supported include air combat, aircrew, combat skills, and ground troop training (GTT).

Air-to-air events involve the test of an air-launched, air-intercept weapon against a variety of aerial targets. Surface-to-air events involve the test of a surface-launched weapon against a variety of aerial targets. Air-to-ground events involve the test of an air-launched, ground attack weapon against a variety of ground-based targets. Surface-to-surface events involve the test of a surface-launched weapon against a surface target. Energetic/munitions test, training, and disposal activities include the use of energetic materials such as propellants and explosives. Electromagnetic events involve ground and flight tests that radiate radio frequency (RF) energy across much of the electromagnetic spectrum. Track test events involve the test of a weapon system mounted on a sled capable of speeds ranging from subsonic to hypersonic.

Range Flight Events

Range flight events are any flight activities using the NAWSCL ranges. These include missions originating from Armitage Airfield or any other military Installation. Range flight events include flight hours; aircraft sorties; supersonic flight events; and unmanned aerial systems flight hours. With the exception of unmanned aircraft sorties, range flight events would increase by up to 25 percent and would continue to occur over the entire North and South Ranges. Due to their increasing role in the military theater, unmanned flight hours could increase more than 25 percent from current flight hours (see Table ES-1).

Airfield Flight Operations

Airfield flight operations at Armitage Airfield would increase by up to 25 percent over current operations. Approximately 4,553 additional flight operations (flights that originate or terminate at Armitage Airfield) would occur, for a total of up to 22,763 annual flight operations. Flight operations would use the NAWSCL ranges or continue on to other locations.

Directed Energy Events

A DE weapon system emits energy in a manner that offers the potential to deny, disrupt, disable, or destroy target electronics or the potential to cause mechanical damage to structures, platforms, or other equipment. It can also provide a nonlethal anti-personnel capability. DE weapons systems include high energy lasers (HEL) and high-powered microwave (HPM). Due to their increasing role in military theater, the amount of HEL and HPM test days could increase more than 25 percent from current activities (see Table ES-1). HEL and HPM testing would continue to occur within the North and South Ranges and include air-to-air, air-to-ground, surface-to-air, surface-to-surface, and electromagnetic scenarios as well as static tests. Tests would occur on travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, and instrumentation sites.

Range Ground Events

Range ground events occurring at NAWSCL include ground-based test and training activities, support activities, and facilities and maintenance activities. These activities would increase by up to 25 percent.

Ground-Based Test and Training Missions

The majority of ground-based test and training missions at NAWSCL are conducted by Installation tenants. RDAT&E events conducted by Naval Air Warfare Center Weapons Division (NAWCWD) include unmanned ground systems (UGS) activities, energetic tests, aircraft survivability tests, counter improvised explosive device (CIED) tests, and track tests. These activities occur within specialized target and test sites of the North and South Ranges. NAWCWD also supports and schedules small-scale GTT events, but to a much lesser degree and on a non-interference basis with the RDAT&E mission. GTT events involve Installation tenants or outside customers (e.g., Special Forces), are typically individualized, and are related to tenant/customer requirements. Other tenants conducting ground-based test and training missions include, but are not limited to, Explosive Ordnance Disposal Mobile Unit Three (EODMU-3), Explosive Ordnance Disposal Training and Evaluation Unit One (EODTEU-1), and the Navy Construction Battalion, Naval Construction Training Command, otherwise known as Seabees. NAWCWD analysis indicates a potential increase of up to 25 percent for ground-based test and training missions with the exception of UGS events and track tests.

Ground-Based Support Missions

RDAT&E and training events may have a ground component, involving support activities required for collecting data essential to evaluate an event's success. These activities include pre-event/setup activities for tests; target-related activities (i.e., target construction, placement/installation, maintenance, recovery, removal, cleanup); launch activities; and post-event/teardown activities.

Existing target and test sites would continue to be used to support test and training events. Target and test sites include impact areas for munitions, instrumentation sites, weapon and target launch sites, weapon firing sites, special purpose ranges and facilities, and roads. Target areas provide impact areas for delivered munitions and may include the use of stationary or mobile targets. Target areas may also be used for test purposes. Test areas, in addition to existing roads and instrumentation sites, are used to evaluate a weapon system or subsystem reaction to a variety of simulated conditions. Target and test site use may increase up to 25 percent as a result of the Proposed Action.

Ground Facilities and Maintenance Activities

Current facility and maintenance activities may include the construction of utilities; maintenance and repair of internal and external elements of buildings; construction of new buildings; demolition of existing buildings; and maintenance, repair, and construction of paved and unpaved roads and other travel surfaces. Utilities include drinking water, wastewater, steam, gases, fuels, and electrical and communications systems. Ground facilities and maintenance activities may increase up to 25 percent as a result of the Proposed Action.

Munitions and Energetic Material Expenditures

In general, target and test sites at NAWSCL are authorized for the use of inert munitions; however, high explosive (HE) use is limited to specific sites. HE use represents approximately 20 percent of the munitions annually expended on NAWSCL ranges with the other 80 percent being inert. In conjunction with the proposed increase in RDAT&E and training events, the amounts of munitions and energetic material expended would also increase up to 25 percent.

Nonmilitary Uses

Nonmilitary uses would not change from current conditions. Public access would continue to be limited to specific areas on a case-by-case basis due to safety and security requirements. The DoN would continue to permit nonmilitary uses to the extent that these activities are compatible with military missions; do not create a safety, security, fiscal, or regulatory risk; and do not adversely impact natural and cultural

resources at NAWSCL. Nonmilitary uses would continue to include Native American use, geothermal use, and recreation. Native American access to NAWSCL-administered lands would continue to be accommodated in accordance with the existing Memorandum of Agreement (MOA) between the DoN and Native American tribes and any subsequent revisions or updates to the existing MOA. Requests for access to other locations on NAWSCL (e.g., rock hounding) would continue to be considered on a case-by-case basis. Geothermal use would continue at the four power plants in the Coso Known Geothermal Resource Area. Recreation uses would continue to include camping, golf and gym access, hiking, hunting, equestrian, off-highway vehicle use, petroglyph tours, birding, and photography.

CLUMP Update

The 2005 CLUMP has been the Installation's formally authorized land management plan since May 2005. Under the Proposed Action, NAWSCL would revise and implement the CLUMP, the long-term, strategic plan that formalizes a corporate process for land use planning and management at NAWSCL, as needed to reflect any changes in land use associated with the anticipated increase in RDAT&E and training tempo under the Proposed Action. This plan provides an integrated framework for the management of military missions, public health and safety practices, and environmental resource conservation programs. The CLUMP contains land use policies, goals, guidelines, and procedures for the management of military missions and environmental resources. The CLUMP incorporates established standard procedures for avoidance and minimization of impacts to environmental resources.

DESCRIPTION OF THE BASELINE ALTERNATIVE/UPDATED NO ACTION ALTERNATIVE (ALTERNATIVE 2)

The Baseline Alternative/Updated No Action Alternative (Alternative 2) includes Congressional renewal of the land withdrawal for 25 years, with continuation of military activities at current levels. Nonmilitary activities would continue according to current patterns of use. The existing CLUMP would be revised, as appropriate, and implemented to manage land use and environmental resources at NAWSCL. Natural and cultural resources would continue to be conserved with implementation of the CLUMP management process.

NO ACTION ALTERNATIVE (ALTERNATIVE 3)

The No Action Alternative (Alternative 3) as originally identified in the Draft EIS/LEIS assumed that the reauthorization of the withdrawal of public lands at NAWSCL would not occur and administrative control of the withdrawn land would remain with the DoN until environmental remediation and health and safety concerns were addressed to allow the return of the land to BLM. With the President signing the FY 2014 NDAA into law on December 26, 2013, the public land withdrawal at NAWSCL was reauthorized until 2039. However, the non-legislative components of the Proposed Action, which are identified in this Final EIS/LEIS as RDAT&E and training and the tempo of these activities, remain the subject of future DoN decision-making. Because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of "no action" conditions at NAWSCL. Therefore, for the purposes of the Final EIS/LEIS, the Baseline Alternative (now retitled Baseline Alternative/Updated No Action Alternative) is considered to effectively represent "no action" conditions or status quo. This alternative is defined as the continuation of military RDAT&E and training activities at NAWSCL at current levels. The discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed.

OTHER ALTERNATIVES CONSIDERED

Ten alternatives were initially considered while preparing this EIS/LEIS. Further analysis resulted in a determination that seven alternatives would either not meet or would exceed the DoN's readiness needs at NAWSCL, or—in one instance (potential transfer of withdrawn lands to the DoN)—would be indistinguishable from the Proposed Action in terms of potential environmental impacts. These seven alternatives were subsequently eliminated from further consideration in this EIS/LEIS. A list of these alternatives follows.

- Decrease Military RDAT&E and Training Alternative
- Increase Military RDAT&E and Training Beyond the Proposed Action Alternative
- Transfer Withdrawn Lands to Department of the Navy Alternative
- Expand NAWSCL Range Footprint to Accommodate RDAT&E and Training Alternative
- Develop New Range to Accommodate RDAT&E and Training Alternative
- Transfer of Ownership of Coso Hot Springs and Prayer Site to Native American Tribes or Land Trust, with Establishment of Permanent Right-of-Way for Native American Tribal Access and Use
- Minerals Development Alternative.

COMPARISON OF ALTERNATIVES

Table ES-1 provides a comparison of the RDAT&E and training elements included in each of the alternatives. A summary comparison of the potential environmental impacts, along with any potential mitigation measures and impact avoidance and minimization measures, for each of the alternatives is presented in Table ES-2. Mitigation measures are those measures that have generally been developed as part of or in conjunction with the proposed action, and which reduce or avoid significant or potentially significant environmental impacts. Impact Avoidance and Minimization Measures have not been developed specifically for purposes of the proposed action, and instead generally represent best management practices or standard operating procedures, or compliance with either generally-applicable legal requirements or permits not associated directly with the proposed action. Impact avoidance and minimization measures for NAWSCL are generally applied on a discretionary, non-interference basis when operations personnel determine that a conservation measure that avoids or minimizes a potential effect can be applied in a mission compatible manner. Impact avoidance and minimization measures generally include actions that voluntarily avoid a potential impact in an operating area or provide an opportunity to remove a potential impact (e.g., removal of a special status species from an area to a similar habitat in a mission compatible location). Table ES-3 provides the DoN's proposed mitigation implementation table. It describes the anticipated benefit of the mitigation for the Proposed Action and the criteria used to evaluate the efficacy of the mitigation. The table also includes a description of how each mitigation measure would be implemented, the responsible command, and the estimated implementation date. Additional mitigation measures and/or monitoring may be identified by the U.S. Fish and Wildlife Service and State Historic Preservation Officer during consultation.

Table ES-1
Comparison of Annual RDAT&E and Training Events for the Alternatives
(Page 1 of 5)

Military Uses			
Activity	**Proposed Action (Alternative 1)**	**Baseline Alternative/Updated No Action Alternative (Alternative 2)**	**No Action Alternative (Alternative 3)**
Range Flight Events (flight hours)	Subsonic missions would increase by up to 25 percent. Flight events would increase by approximately 1,438 additional flight hours to 7,188 annual flight hours. Supersonic flight events would increase to approximately 125 events per year.	Continue current level of test and training events at 5,750 flight hours per year. Continue current level of supersonic flight events at 100 events per year.	The discussion of annual RDAT&E and training events for the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
Airfield Flight Events (take-offs and landings)	Operations from Armitage Airfield would increase by up to 25 percent. Use would increase by approximately 4,553 additional flight operations to 22,763 annual events.	Continue current level of operations from Armitage Airfield with 18,210 annual flight events.	
Aircraft Flights (sorties)	Aircraft flights would increase by up to 25 percent: North Range 4,794 Echo Range 3,549 Superior Valley 3,944 TOTAL 12,287	Continue current level of aircraft flights: North Range 3,835 Echo Range 2,839 Superior Valley 3,155 TOTAL 9,829	
Unmanned Aerial System (UAS) Flights (flight hours)	Increase of UAS flight hours: Group 1 (0–20 pounds) 156 Group 2 (21–55 pounds) 1,600 Group 3 (<1,320 pounds) 3,000 Group 4 and 5 (>1,320 pounds) 4,000 TOTAL 8,756	Continue current level of UAS flight hours: Group 1 (0–20 pounds) 16 Group 2 (21–55 pounds) 42 Group 3 (<1,320 pounds) 29 Group 4 and 5 (>1,320 pounds) 1,500 TOTAL 1,587	
Directed Energy Events (test days)	Increase of directed energy events: HEL Weapons testing 115 HPM Weapons testing 115 TOTAL 230	Continue current level of directed energy events: HEL Weapons Testing 50 HPM Weapons Testing 50 TOTAL 100	
Range Ground Events	Continue use of existing authorized target and test sites on the North and South Ranges.	Continue use of existing authorized target and test sites on the North and South Ranges.	

Table ES-1
Comparison of Annual RDAT&E and Training Events for the Alternatives
(Page 2 of 5)

Military Uses			
Activity	**Proposed Action (Alternative 1)**	**Baseline Alternative/Updated No Action Alternative (Alternative 2)**	**No Action Alternative (Alternative 3)**
Unmanned Ground System (UGS) (test hours)	Increase of UGS activities: Group 1 (0–5,000 pounds) 1,144 Group 2 (5,000–15,000 pounds) 728 Group 3 (>15,000 pounds) 312 TOTAL 2,184	Continue current level of UGS activities: Group 1 (0–5,000 pounds) 364 Group 2 (5,000–15,000 pounds) 234 Group 3 (>15,000 pounds) 96 TOTAL 694	The discussion of annual RDAT&E and training events for the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
Energetics	Energetic Tests Insensitive Munitions 219 Propulsion 56 Air Breathing Engine/Material Evaluation 44 Warhead 176 Weapon Survivability Laboratory (test series) 38 EOD Land Demolition 194 TOTAL 727 CIED Tests (test events) 2,094 EOD Training – Darwin Wash (classes) 38 Test Track (test events) SNORT 30 G-4 7 TOTAL 37	Energetic Tests Insensitive Munitions 175 Propulsion 45 Air Breathing Engine/Material Evaluation 35 Warhead 141 Weapon Survivability Laboratory (test series) 30 EOD Land Demolition 155 TOTAL 581 CIED Tests (test events) 1,675 EOD Training – Darwin Wash (classes) 30 Test Track (test events) SNORT 15 G-4 3 TOTAL 18	
Mobile Targets	Increase of mobile target use: Aerial Targets 35 Vehicular Land Targets 451 TOTAL 486	Continue current level of mobile target use: Aerial Targets 25 Vehicular Land Targets 361 TOTAL 386	
Ground Troop Training (GTT) (training events)	Continue current GTT activities, plus increase the tempo of GTT training events in established areas: Small Group as needed Large Group 53	Continue current patterns of GTT events at existing areas: Small Group as needed Large Group 42	

Table ES-1
Comparison of Annual RDAT&E and Training Events for the Alternatives
(Page 3 of 5)

Military Uses			
Activity	**Proposed Action (Alternative 1)**	**Baseline Alternative/Updated No Action Alternative (Alternative 2)**	**No Action Alternative (Alternative 3)**
Munitions Expenditures	Munitions expenditures would increase by up to 25 percent: Bombs North Range 514 Echo Range 816 Superior Valley 13,080 TOTAL 14,410 Gun Munitions North Range 23,354 Echo Range 5,280 Superior Valley 93,725 Darwin Wash 3,292,800 TOTAL 3,415,159 Rockets North Range 458 Superior Valley 428 TOTAL 886 Missiles North Range 136 Other (flares, chaff, etc.) North Range 2,850 Echo Range 93 Superior Valley 155 TOTAL 3,098	Continue current level of munitions expenditures: Bombs North Range 411 Echo Range 653 Superior Valley 10,464 TOTAL 11,528 Gun Munitions North Range 18,683 Echo Range 4,224 Superior Valley 74,980 Darwin Wash 2,634,240 TOTAL 2,732,127 Rockets North Range 366 Superior Valley 342 TOTAL 708 Missiles North Range 109 Other (flares, chaff, etc.) North Range 2,280 Echo Range 74 Superior Valley 124 TOTAL 2,478	The discussion of annual RDAT&E and training events for the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).

Table ES-1
Comparison of Annual RDAT&E and Training Events for the Alternatives
(Page 4 of 5)

Military Uses			
Activity	**Proposed Action (Alternative 1)**	**Baseline Alternative/Updated No Action Alternative (Alternative 2)**	**No Action Alternative (Alternative 3)**
Energetic Material Expenditures	Energetic material expenditures would increase by up to 25 percent on the North Range; expenditure of energetic material on the South Range would not occur: C-4 (pounds) 1,369 Detasheet 0.125 350 Detonation Cord (feet) 15,118 Dynamite 140 Exrod 70 Gun Powder (pounds) 6,151 High Explosives (pounds) 27,891 Satchel Charge C-4 105 Smoke Grenades 140 Squibs/Initiators (pounds) 402 TNT (pounds) 41,390 Propellants (pounds NEW*) 789,061	Continue current level of energetic material expenditures on the North Range; expenditure of energetic material on the South Range would not occur: C-4 (pounds) 1,095 Detasheet 0.125 280 Detonation Cord (feet) 12,094 Dynamite 112 Exrod 56 Gun Powder (pounds) 4,889 High Explosives (pounds) 22,313 Satchel Charge C-4 84 Smoke Grenades 112 Squibs/Initiators (pounds) 318 TNT (pounds) 33,112 Propellants (pounds NEW*) 631,249	

Table ES-1
Comparison of Annual RDAT&E and Training Events for the Alternatives
(Page 5 of 5)

Nonmilitary Uses		
Activity	**Proposed Action (Alternative 1) and Baseline Alternative/Updated No Action Alternative (Alternative 2)**	**No Action Alternative (Alternative 3)**
Native American Uses	Continue access to Coso Hot Springs and Prayer Site per Memorandum of Agreement. Consider other access on a case-by-case-basis. Access to other areas of the Installation granted dependent upon scheduling and safety concerns.	The discussion of annual RDAT&E and training events for the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
Geothermal Production	Geothermal use would continue at the four power plants in the Coso Known Geothermal Resource Area.	
Research and Education	Continue DoN sponsorship of research projects and consideration of externally directed research on a case-by-case basis.	
Recreation		
Camping	Allow camping on a case-by-case basis.	
Golf and Gym	Keep golf course and gymnasium open to the public.	
Hiking	Consider on-installation hikes on a case-by-case basis.	
Equestrian	Allow access at a specified area on G-Range Approach Corridor on a case-by-case basis.	
Off-Road Vehicle	Permit off-road vehicle to cross Randsburg Wash Access Road during public events sponsored by BLM.	
Petroglyph Tours	Allow petroglyph tours to the extent practicable in accordance with the NAWSCL Public Access Policy.	
Bird Watching	Allow Audubon Society annual bird counts.	
Photography	Allow photography on a case-by-case basis.	

* NEW - Net Explosive Weight

Table ES-2
Summary of Influencing Factors and Environmental Impacts
(Page 1 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Land Use	Impacts • Off-installation noise effects from aircraft flight events would continue to exceed noise compatibility thresholds at certain noise-sensitive receptors with significant land use impacts. • Land use on NAWSCL would be managed in accordance with the Installation CLUMP that accounts for proposed increases in mission activities. • Use of the Installation property would be compatible with adjacent land uses.	Impacts • Off-installation noise effects from aircraft flight events would continue to exceed noise compatibility thresholds at certain noise-sensitive receptors with significant land use impacts. • Land use on NAWSCL would continue to be managed in accordance with the Installation CLUMP. • Use of the Installation property would not change and would be compatible with adjacent land uses.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
	Mitigation Measures • None.	Mitigation Measures • None.	
	Impact Avoidance and Minimization Measures • Compliance with the land use management recommendations of the 2011 AICUZ Update.	Impact Avoidance and Minimization Measures • Compliance with the land use management recommendations of the 2011 AICUZ Update.	

Table ES-2
Summary of Influencing Factors and Environmental Impacts
(Page 2 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Noise	Impacts • Existing aircraft noise from ongoing aircraft flight operations at Armitage Field is a significant land use compatibility impact around NAWSCL. Off-installation noise effects from aircraft flight operations under the Proposed Action would continue to exceed noise compatibility thresholds at certain noise-sensitive receptors in the communities of China Lake Acres and Ridgecrest. The overall aircraft noise impacts would remain significant. The noise contour from munitions expenditures would be marginally larger; however, the difference would be negligible. • Existing nonmilitary uses at NAWSCL would produce a negligible amount of noise.	Impacts • No change would occur in noise conditions around NAWSCL. • Off-installation noise effects from aircraft flight operations would continue to exceed noise compatibility thresholds at certain noise-sensitive receptors and would continue to be a significant noise impact.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
	Mitigation Measures • Continue implementation of the NAWSCL air operations noise abatement and aircrew education programs to minimize noise impacts on- and off-installation.	Mitigation Measures • Continue implementation of the NAWSCL air operations noise abatement and aircrew education programs to minimize noise impacts on- and off-installation.	
	Impact Avoidance and Minimization Measures • Compliance with the land use management recommendations of the 2011 AICUZ Update. • Maintain and enhance NAWSCL community information programs and AICUZ Program outreach efforts. • Continue the NAWSCL noise complaint response program.	Impact Avoidance and Minimization Measures • Compliance with the land use management recommendations of the 2011 AICUZ Update. • Maintain and enhance NAWSCL community information programs and AICUZ Program outreach efforts. • Continue the NAWSCL noise complaint response program.	

Table ES-2
Summary of Influencing Factors and Environmental Impacts
(Page 3 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Air Quality	Impacts • Increased aircraft operations would result in an increase in air emissions. The increased emissions would be well below *de minimis* levels and the General Conformity Rule would not be applicable. Net increases of emissions would be below the Prevention of Significant Deterioration program levels and General Conformity Rule *de minimis* values and would be less than significant. • Activities associated with ground-based activities (e.g., GTT, test and target setup/tear down) would result in short-term air quality impacts. • Emissions associated with the Proposed Action would not hinder maintenance of the NAAQS or CAAQS.	Impacts • No change would occur in air quality conditions. • Emissions associated with the Baseline Alternative/Updated No Action Alternative would not hinder maintenance of the NAAQS or CAAQS.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
	Mitigation Measures • Implement dust control measures during construction.	Mitigation Measures • Implement dust control measures during construction.	
	Impact Avoidance and Minimization Measures • None.	Impact Avoidance and Minimization Measures • None.	
Biological Resources (continued)	Impacts • Potentially significant impacts to desert tortoises associated with wildland range fires. • Continuation of current management practices with respect to wild horses and burros would have a positive effect on the respective herds as well as natural resources generally. The management guidance set forth in the updated INRMP (and Wild Horse and Burro Management Program) would enhance these positive effects. • Potentially significant impacts associated with the increased use of hot spotting charges in order to optimize safety, and to facilitate the tracking and retrieval of munitions.	Impacts • Potential impacts to biological resources would be similar to those described under the Proposed Action.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).

Table ES-2
Summary of Influencing Factors and Environmental Impacts
(Page 4 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Biological Resources (continued)	• Potentially significant impact associated with the removal of fire-fighting personnel from the South Range, increasing the fire response time.		
	Mitigation Measures • Continue the control of wild horses and feral burro populations on NAWSCL. • Continue the control of invasive species to reduce degradation of plant and wildlife habitats, and to reduce the frequency of wild fires on NAWSCL. • Implement provisions stipulated in the most current and applicable BOs (see discussion of BOs in Section 3.4.3.1 and desert tortoise CAAQS in Appendix J). • Implement provisions of the approved INRMP and successor documents.	Mitigation Measures • Mitigation measures would be similar to those described under the Proposed Action.	
	Impact Avoidance and Minimization Measures • Continue to conduct focused plant and animal species surveys across the entirety of NAWSCL. Compile these biological data into GIS to document current distribution and density of the NAWSCL federally listed and special status species. • Compilation of these data would establish resource baselines and allow natural resources managers to monitor and detect when a particular special status species, or its habitat, may be in decline. If a decline in overall species numbers is detected, or if there is a reduction in habitat quality and area, then additional and focused management steps would be implemented to curtail and reduce future impacts on those particular species or habitats.	Impact Avoidance and Minimization Measures • Impact avoidance and minimization measures would be similar to those described under the Proposed Action.	

Table ES-2
Summary of Influencing Factors and Environmental Impacts
(Page 5 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Biological Resources (continued)	• Compilation of an integrated natural resources database also facilitates project planning and approval processes in support of current and evolving mission requirements. • Continue avian surveys and monitoring in accordance with applicable requirements (e.g., MBTA [and Military Readiness Rule], Bald and Golden Eagle Protection Act, etc.) and management plans (e.g., INRMP and CLUMP) in areas that provide suitable perching and nesting habitat for federally protected bird species that have the potential to be adversely affected by activities conducted at NAWSCL. • For instances where a federally protected avian species may be at risk from a planned activity, project personnel and EMD would work cooperatively to implement appropriate impact avoidance and minimization measures as operational conditions permit. • Continue the effective application of project and activity review and approval processes (NAWSCL NEPA Instruction and NAWSCL Site Approval Process) and promote the adaptive reuse of existing operational assets to minimize potential effects to biological resources and the need for new project construction. • Increase the level of decision quality information available for use in project planning processes to support mission compatible avoidance or minimization measures and achieving natural resources management goals and objectives. Information collected and catalogued on natural resources would be coordinated with applicable stakeholders. Surveys and monitoring would continue to be conducted on a non-interference basis with military operations.		

Table ES-2
Summary of Influencing Factors and Environmental Impacts
(Page 6 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Biological Resources (continued)	• Continue to evaluate and enhance fire management measures on NAWSCL, particularly for areas where wild fires have historically been difficult to control. • Conduct post-event biological surveys in accordance with the 2013 BO to assess the potential effect to natural resources from military activities when fires leave the target area and enter adjoining critical habitat and document the date, time, location, cause, and acreage of the fire. Fires would be mapped using GPS and plotted in GIS. • In desert tortoise habitat, post-fire surveys would include focused surveys to determine whether any desert tortoises have been injured or killed. The DoN would conduct the surveys in accordance with the desert tortoise pre-project survey guidelines (http://www.fws.gov/ventura/species_information/protocols_guidelines/index.html) and include the results in its annual report to USFWS. An authorized biologist would lead the surveys. • Post-fire surveys would be limited to an annual cumulative acreage of 2,000 acres (1,000 acres in desert tortoise critical habitat and 1,000 acres outside of desert tortoise critical habitat). The 2,000-acre limit is due to the practicality and logistical feasibility of conducting timely surveys over an area larger than 1,000 acres in both areas. In the instance of an unforeseen fire that exceeds this acreage, the DoN would consult with USFWS as soon as possible.		

Table ES-2
Summary of Influencing Factors and Environmental Impacts
(Page 7 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Cultural Resources	Impacts • Potential impacts to cultural resources from increased aircraft operations would be reduced to less than significant by implementation of mitigation measures and impact avoidance and minimization measures. • The proposed increase in the level of use of test areas and targets would potentially result in an increase in disturbance to cultural resources. • Potential impacts to cultural resources from increased ground activities and target and test site use would be reduced to less than significant by implementation of mitigation measures and impact avoidance and minimization measures. • Tribes have visited the Coso Hot Springs Traditional Cultural Property (TCP) before geothermal production began in the Coso Geothermal LMU. No changes are proposed to geothermal plant operations and the conditions of the Hot Springs (temperature and water levels) have been relatively stable since 2002, with average temperature declining appreciably subsequent to 1993. The Proposed Action would have no adverse effects on historic properties, and there would be no significant impacts to cultural resources. • Nonmilitary recreational activities would not change and would not impact cultural resources. • Implementation of the CLUMP would be a beneficial impact to cultural resources at NAWSCL.	Impacts • Potential impacts to cultural resources would be similar to those described under the Proposed Action.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).

Table ES-2
Summary of Influencing Factors and Environmental Impacts
(Page 8 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Cultural Resources (continued)	Mitigation Measures • Environmental awareness briefings would be required for military, civilian, and contractor personnel. • Vehicle traffic would be limited to roads (in accordance with Ranges Road Usage Direction), test and target areas, and existing instrumentation sites.	Mitigation Measures • Mitigation measures would be similar to those described under the Proposed Action.	
	Impact Avoidance and Minimization Measures • Undeveloped areas, if previously unevaluated, would undergo review through the Installation's existing environmental review process presented in the ICRMP prior to use. Compliance with the ICRMP. • Internal discussions between the EMD and program manager during the planning process to reduce impacts to cultural resources through avoidance strategies or project alteration. • Completion of environmental studies around targets and test sites to make informed avoidance decisions. • Consultation between the DoN, federal and state regulatory agencies, Tribes, and interested parties to resolve potential adverse effects to historic properties. • Development and implementation of appropriate treatment plans for cultural resources determined to be National Register-eligible in accordance with the ICRMP, including data recovery fieldwork, data analysis, and consultation, would occur. • Development and implementation of appropriate treatment plans for paleontological resources consistent with professional standards, protocols, and measures established by professional organizations and agencies including the SVP as discussed in the ICRMP, and the BLM.	Impact Avoidance and Minimization Measures • Impact avoidance and minimization measures would be similar to those described under the Proposed Action.	

Table ES-2
Summary of Influencing Factors and Environmental Impacts
(Page 9 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Cultural Resources (continued)	In the event that human remains are found, the following would occur: • Suspension of ground-disturbing activities in the affected area, preservation in place and avoidance of human remains and associated funerary or sacred objects, and notification of NAWSCL. • NAWSCL would initiate consultation with the appropriate state and federal agencies and federally recognized tribes in accordance with established NAGPRA procedures, including a 30-day cessation of work in the affected area; creation of a Plan of Action and appropriate consultation may prevent 30-day work stoppages (43 CFR 10). • Continued Environmental Awareness briefings would be conducted for personnel operating in GTT areas. • Off-road vehicle use and any ground-disturbing activities is prohibited. • Small group GTT locations over land would be intentionally varied in order to reduce the possibility of the formation or marking of trails by ground troops. Only pedestrian traffic, including pack animals and working dogs, is approved for off-road travel. • Larger group GTT activities would occur on existing travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, and instrumentation sites. These activities would not include any new surface disturbances.		

Table ES-2
Summary of Influencing Factors and Environmental Impacts
(Page 10 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Geology and Soils	Impacts • Increased use of target and test sites is not expected to result in a substantial change to soil characteristics. • Due to the relatively low intensity of use and limitation of activities to previously disturbed areas, potential impacts to soil resources due to increased ground events would be less than significant. • Nonmilitary uses would not change from current conditions; no impact would occur to geology and soils. • Implementation of the CLUMP would serve to minimize and mitigate potential impacts to geology and soils, representing a beneficial impact.	Impacts • Continued use of target and test sites is not expected to result in a substantial change to soil characteristics. • Due to the relatively low intensity of use and limitation of activities to previously disturbed areas, potential impacts to soil resources due to ground events would be less than significant. • Nonmilitary uses would continue at current levels; no impact to geology and soils would occur. • Implementation of the CLUMP would serve to minimize and mitigate potential impacts to geology and soils, representing a beneficial impact.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
	Mitigation Measures • None.	Mitigation Measures • None.	
	Impact Avoidance and Minimization Measures • None.	Impact Avoidance and Minimization Measures • None.	
Water Resources	Impacts • With limited employment increase at NAWSCL, increased RDAT&E and training events would not be anticipated to result in a significant increase in water use. • Since activities do not take place in proximity to surface water resources, the proposed increased use of munitions at existing target and test sites would not affect surface water quality or supply and would not be significant. • Implementing the CLUMP would enhance the conservation and protection of NAWSCL surface water resources, and would incorporate the management actions defined in the existing cooperative groundwater management agreement between the Installation and other participating water purveyors.	Impacts • Potential impacts to water resources would be similar to those described under the Proposed Action.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).

Table ES-2
Summary of Influencing Factors and Environmental Impacts
(Page 11 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Water Resources (continued)	Mitigation Measures • None.	Mitigation Measures • None.	

	Impact Avoidance and Minimization Measures
	• NAWSCL would continue proactive water conservation practices of replacing turf and other high water-use vegetation with xeriscaped landscapes, repairing leaking pipes, re-lining water storage reservoirs, reducing distribution line flushing from hydrants and valves during drought, and installation of dual flush toilets and low-flow shower heads/faucets. Further, NAWSCL would also continue to:
	  • Limit and monitor additional large-scale pumping in areas designated in the IWV Cooperative Groundwater Management Plan.
	  • Distribute new groundwater production in a manner that minimizes adverse effects on existing use patterns.
	  • Advocate the use of treated water; reclaimed water; and recycled, gray, and lower-quality waters for appropriate applications.
	  • Explore the utility of other groundwater management methods, such as water transfer, banking, imports, and replenishment. Continue cooperative groundwater data-acquisition and coordination efforts.
	  • Explore potential for improvements to cooperative management framework.
		Impact Avoidance and Minimization Measures
		• Impact avoidance and minimization measures would be similar to those described under the Proposed Action.	

Table ES-2
Summary of Influencing Factors and Environmental Impacts
(Page 12 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Socioeconomics and Environmental Justice	Impacts • Personnel levels would remain stable. • No impact to socioeconomics linked to Installation activity would occur, including the employment rate or demand for housing and schools. • A beneficial impact would occur to the local economy due to a slight increase in local expenditures. • Nonmilitary uses would not change from current conditions; no impact on socioeconomics would occur. • Implementation of the CLUMP would have no impact on socioeconomics. • Implementation of this alternative would not result in disproportionately high and adverse human health or environmental effects on minority or low-income populations nor would it result in environmental health risks and safety risks that may disproportionately affect children.	Impacts • Potential impacts to socioeconomics would be similar to those described under the Proposed Action.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
	Mitigation Measures • None.	Mitigation Measures • None.	
	Impact Avoidance and Minimization Measures • None.	Impact Avoidance and Minimization Measures • None.	

Table ES-2
Summary of Influencing Factors and Environmental Impacts
(Page 13 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Utilities and Public Services	Impacts • Demand placed on utilities and public services would not exceed existing capacities. • Nonmilitary uses would not place additional demand on utilities or public services. • Implementation of the CLUMP would serve to facilitate improved planning and decision-making, representing a beneficial impact.	Impacts • Potential impacts to utilities and public services would remain unchanged from baseline conditions and would not be significant.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
	Mitigation Measures • None.	Mitigation Measures • None.	
	Impact Avoidance and Minimization Measures • None.	Impact Avoidance and Minimization Measures • None.	
Public Health and Safety	Impacts • Range activities would continue to be conducted in accordance with established safety policies and procedures. • The DoN would implement additional safety measures (as appropriate) for new or developing systems to ensure the safety of the public and military personnel. • Safety hazard areas would be established prior to initiating new or developing an existing system.	Impacts • Range activities would continue to be conducted in accordance with established safety policies and procedures. • Public health and safety concerns would not change from current conditions. • Continued nonmilitary uses would not result in additional public health and safety concerns. • Implementation of the CLUMP would serve to facilitate improved planning and decision-making, representing a beneficial impact.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
	• Continued nonmilitary uses would not result in additional public health and safety concerns. • Implementation of the CLUMP would serve to facilitate improved planning and decision-making, representing a beneficial impact.		

Table ES-2
Summary of Influencing Factors and Environmental Impacts
(Page 14 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Public Health and Safety (continued)	Mitigation Measures • None.	Mitigation Measures • None.	
	Impact Avoidance and Minimization Measures • Access control would continue through the use of existing systems, including badging authorized personnel, perimeter fencing, roadblocks, barricades, locked gates, and guard posts. • Test and training activities would be conducted in accordance with established safety policies and procedures. • Current range and airspace safety procedures would continue to be implemented. • Civilian and commercial aircraft would continue to be restricted from the airspace over the ranges when they are being used for military activities. • Implementation of the existing BASH program would continue to keep pilots advised of bird movements to minimize the potential for bird strikes. • RF-emitting devices would be limited to PELs for controlled environments and would follow approved SOPs. • Safety exclusion zones would be established and clearly delineated. • Laser activities would be managed in accordance with appropriate range safety regulations and approved SOPs.	Impact Avoidance and Minimization Measures • Impact avoidance and minimization measures would be similar to those described under the Proposed Action.	

Table ES-2
Summary of Influencing Factors and Environmental Impacts
(Page 15 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Public Health and Safety (continued)	• Backdrops, buffer zones, beam path restrictors, and administrative controls would be in place during ground-based laser activities. • Non-essential personnel would be evacuated from the area prior to initiating tests. • Continue policy of clearing UXO and removing MPPEH from the ranges after tests are conducted as conditions allow.		
Hazardous Materials/ Hazardous Waste Management	Impacts • Current management practices would remain in place, and the volume of materials and wastes managed is expected to increase by up to 25 percent. • Hazardous materials storage/usage would remain within reportable limits, and hazardous waste generation would remain within the Installation's permitted limits. • Installation Restoration sites would continue to be identified, investigated, and remediated, as appropriate. • Implementation of the CLUMP would formalize and integrate the environmental review process that is applied to military and nonmilitary actions using hazardous materials and generating hazardous wastes, representing a beneficial impact.	Impacts • Current management practices would remain in place, and the volume of materials and wastes managed would not increase. • Hazardous materials storage/usage would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits. • Installation Restoration sites would continue to be identified, investigated, and remediated, as appropriate. • Implementation of the CLUMP would formalize and integrate the environmental review process that is applied to military and nonmilitary actions using hazardous materials and generating hazardous wastes, representing a beneficial impact.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
	Mitigation Measures • None.	Mitigation Measures • None.	
	Impact Avoidance and Minimization Measures • None.	Impact Avoidance and Minimization Measures • None.	

Table ES-2
Summary of Influencing Factors and Environmental Impacts
(Page 16 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Transportation	Impacts • Daily vehicle trips to and from NAWSCL would not change; however, periodic increases for increased GTT events would occur. • LOS of the local road network would continue to operate at acceptable levels. • Two intersections (Sandquist Road/Lauritsen Road and East Inyokern Road/Bullard Road) would continue to operate at unacceptable LOS. • Implementation of the CLUMP would serve to facilitate improved planning and decision-making, representing a beneficial impact.	Impacts • Daily vehicle trips to and from NAWSCL would not change. • LOS of the local road network would not change and would continue to operate at acceptable levels. • Two intersections (Sandquist Road/Lauritsen Road and East Inyokern Road/Bullard Road) would continue to operate at unacceptable LOS. • Implementation of the CLUMP would serve to facilitate improved planning and decision-making, representing a beneficial impact.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
	Mitigation Measures • None.	Mitigation Measures • None.	
	Impact Avoidance and Minimization Measures • None.	Impact Avoidance and Minimization Measures • None.	

AICUZ = Air Installation Compatible Use Zone
BASH = Bird Aircraft Strike Hazard
BLM = Bureau of Land Management
BMP = best management practice
BO = Biological Opinion
CA SHPO = California State Historic Preservation Officer
CAAQS = California Ambient Air Quality Standards
CFR = Code of Federal Regulations
CLUMP = Comprehensive Land Use Management Plan
CRPM = Cultural Resources Program Manager
EMD = Environmental Management Division
GIS = geographic Information System
GPS = global positioning system
GTT = ground troop training
ICRMP = Integrated Cultural Resources Management Plan
IEPM = Installation Environmental Program Manager
LMU = Land Management Unit
LOS = level of service
MBTA = Migratory Bird Treaty Act
MPPEH = material potentially presenting an explosive hazard
NAAQS = National Ambient Air Quality Standards
NAGPRA = Native American Graves Protection and Repatriation
NAWSCL = Naval Air Weapons Station China Lake
NEPA = National Environmental Policy Act
PEL = permissible exposure limit
RDAT&E = Research, Development, Acquisition, Test, and Evaluation
SOP = standard operating procedure
SVP = Society of Vertebrate Paleontology
TCP = Traditional Cultural Property
USFWS = U.S. Fish and Wildlife Service
UXO = unexploded ordnance

Table ES-3
Mitigation Identification and Implementation
(Page 1 of 3)

Mitigation Measure	Benefit	Evaluation Criteria	Implementation	Responsible Command	Date Implemented
Noise					
Continue implementation of the NAWSCL air operations noise abatement and aircrew education programs to minimize noise impacts on- and off-installation.	Educates aircrews to be aware of communities and noise-sensitive receptors so that noise impacts can be avoided or minimized.	Number of noise complaints from communities and noise-sensitive receptors.	Ensure aircrews receive R2508 Users Briefing.	Host and Tenant Command, as appropriate.	Ongoing.
Air Quality					
Implement dust control measures during construction.	Reduced PM_{10} emissions from ground-disturbing activities (i.e., construction, maintenance, and demolition activities).	Visual evaluations by EMD staff, project personnel, and/or complaints by interested parties.	Dust control measures are identified during environmental review and incorporated into each project, as appropriate. As part of the contracting process, EMD staff meets with the contractor and provides additional information at the Preconstruction or the Post Award Kickoff Meeting.	Host and/or Tenant Command, as appropriate.	Ongoing.
Biological Resources					
Continue the control of wild horses and feral burro populations on NAWSCL.	Riparian habitat throughout the North Range, including Inyo California towhee habitat, would be improved by this mitigation measure. Horses would benefit by higher quality forage, less competition with feral burros, and facilitated maintenance of genetic diversity of the herd.	Census flights would confirm horse and burro population size and distribution and subsequent reductions in numbers of animals gathered in successive years. Surveys of riparian areas would document plant diversity and numbers.	Continue to conduct annual wild horse and burro census flights. Continue to survey riparian areas to document water quality and use by wildlife.	Host Command with contractor support, as appropriate.	Ongoing.

Table ES-3
Mitigation Identification and Implementation
(Page 2 of 3)

Mitigation Measure	Benefit	Evaluation Criteria	Implementation	Responsible Command	Date Implemented
Continue the control of invasive species, to reduce degradation of plant and wildlife habitats, and to reduce the frequency of wild fires on NAWSCL.	Controlling invasive plant species would provide an opportunity for return of native vegetation, which in turn would provide habitat for native animal species. Reduce degradation of plant and wildlife habitats, and reduce the frequency of wild fires on NAWSCL.	Ongoing invasive weed species inventories would document changes in numbers and locations of these species.	Continue to survey for and treat invasive species.	Host Command with Tenant support.	Ongoing.
Implement provisions stipulated in the most current and applicable BOs (see discussion of BOs in Section 3.4.3.1 and desert tortoise BO in Appendix J).	Eliminates and minimizes impacts to, and incidental take of, desert tortoises.	Yearly review of BO requirements (e.g., habitat consumption in test arena/target area and facilities in association with the numbers of tortoises relocated, tailgate briefs, and preconstruction surveys would document the activities associated with meeting the requirements of the 2013 BO for management of desert tortoise).	Tenant Commands would provide the Host Command with information on the amounts of habitat consumed. (e.g., Host Command would track the number of tortoise awareness briefs, preconstruction surveys, and tailgate briefs).	Host and Tenant Command, as appropriate.	Ongoing.
Implement provisions of the approved INRMP and successor documents.	Protect and conserve natural resources throughout NAWSCL.	Five-year review of INRMP requirements.	Tenant Commands would provide the Host Command with information on the proposed RDAT&E activity. (e.g., Host command would identify natural resources in the area and conduct awareness briefs).	Host and Tenant Command, as appropriate.	Ongoing.

Table ES-3
Mitigation Identification and Implementation
(Page 3 of 3)

Mitigation Measure	Benefit	Evaluation Criteria	Implementation	Responsible Command	Date Implemented
Cultural Resources					
Environmental awareness briefings would be required for military, civilian, and contractor personnel.	Increased understanding of Federal Regulation and DoN Direction as well as Installation cultural property types would lead to better understanding by employees of the potential impact of activities.	Decrease in accidental impacts to cultural properties on the Installation.	Briefings would be provided in accordance with Installation policy to individuals that work on the Installation in positions that have the potential to impact cultural properties.	Host and Tenant Command, as appropriate.	Needs to be implemented.
Vehicle traffic would be limited to roads (in accordance with Road Use Policy), test and target areas, and existing instrumentation sites.	Reduction of potential impacts to resources.	Reduced number of impacts to cultural resources due to road proliferation.	Implementation of Installation road management policy.	Host and/or Tenant Command, as appropriate.	Partially implemented.

This page intentionally left blank.

CHAPTER 1.0
PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

This Environmental Impact Statement (EIS)/Legislative Environmental Impact Statement (LEIS) was prepared by the U.S. Department of the Navy (DoN) in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code [U.S.C.] § 4321 et seq.), the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (Title 40 Code of Federal Regulations [CFR] §§ 1500–1508), DoN Procedures for Implementing NEPA (32 CFR § 775), and the California Desert Protection Act (CDPA) of 1994 (16 U.S.C. § 410aaa et seq.). This EIS/LEIS satisfies the requirements of NEPA and will be filed with the U.S. Environmental Protection Agency (USEPA) and distributed to appropriate federal, state, local, and private agencies, organizations, and individuals for review and comment.

Naval Air Weapons Station China Lake (NAWSCL or Installation) is located in the Western Mojave Desert region of California, approximately 150 miles (241 kilometers) northeast of Los Angeles (Figure 1-1). NAWSCL is host to the Naval Air Warfare Center Weapons Division (NAWCWD) and other Department of Defense (DoD) activities. NAWCWD is the primary tenant command supported at NAWSCL. It is the DoN's Center of Excellence for Weapons and Armaments, and has responsibility for research, development, acquisition, test, and evaluation (RDAT&E) for the entire spectrum of naval weapons and armaments (i.e., air, surface, and subsurface). Table 1-1 shows the various major tenants at NAWSCL and their respective missions.

NAWCWD is a multisite organization that includes the land range at NAWSCL and the Point Mugu Sea Range. NAWCWD's mission is to execute full-spectrum weapons and warfare systems RDAT&E. NAWSCL supports NAWCWD at China Lake and Naval Base Ventura County supports NAWCWD at Point Mugu Sea Range. NAWSCL operates and maintains support services, including facilities and infrastructure, airfield operations, safety and security services, and land use and environmental management programs in support of the NAWCWD mission.

NAWSCL encompasses approximately 1.1 million acres (445,156 hectares) of diverse desert terrain, and is extensively instrumented to support DoN and DoD test and training missions. While the Proposed Action (Alternative 1) supports the missions of NAWSCL and NAWCWD, for the purposes of this EIS/LEIS, the proponent will be referred to collectively as NAWSCL.

This EIS/LEIS addresses the DoN's proposal to continue the withdrawal of 1,044,126 acres (422,544 hectares) of public lands in Kern, Inyo, and San Bernardino counties. These lands are administered by NAWSCL in accordance with a 1994 Memorandum of Agreement between the Secretary of the Navy and the Bureau of Land Management (BLM). The land withdrawal extension allows the DoN to continue defense-related RDAT&E and other land uses at NAWSCL. Any minor land use changes that would result from a decision to accommodate an increase in military RDAT&E and training would be incorporated in the NAWSCL Comprehensive Land Use Management Plan (CLUMP). The CLUMP was developed in accordance with the CDPA and is the strategic planning vehicle through which NAWSCL manages land use and environmental resources. The CLUMP incorporates the goals and guidelines of the Installation's current Integrated Natural Resources Management Plan (INRMP), which is required under the Sikes Act as amended in 1997 (16 U.S.C. § 670a et seq.), and the Integrated Cultural Resources Management Plan (ICRMP).

The DoN is the lead agency for preparation of the EIS/LEIS, with BLM as a cooperating agency. BLM, in partnership with the DoN, requested that Congress renew the land withdrawal to allow for continued RDAT&E and training for another 25 years. As part of the decision-making process with respect to those portions of the Proposed Action for which the DoN has decision-making authority—the CLUMP revision and accommodation of current and evolving RDAT&E and training—the DoN will review the EIS/LEIS and consider the potential environmental impacts and other factors relative to national defense as a result of implementing either the Proposed Action or the Baseline Alternative/Updated No Action Alternative.

1.2 PURPOSE AND NEED

The purpose of the Proposed Action (Alternative 1) is to retain a military range for RDAT&E and training activities for 25 years. The Proposed Action would meet the need to support the application of current and evolving technology to solve theatre-relevant problems for the war fighter and ensure necessary training readiness, while ensuring appropriate management of land use and environmental resources. The purpose is also to revise and implement the Installation's CLUMP and maintain DoN readiness by accommodating current and evolving state-of-the-art RDAT&E and training requirements at NAWSCL.

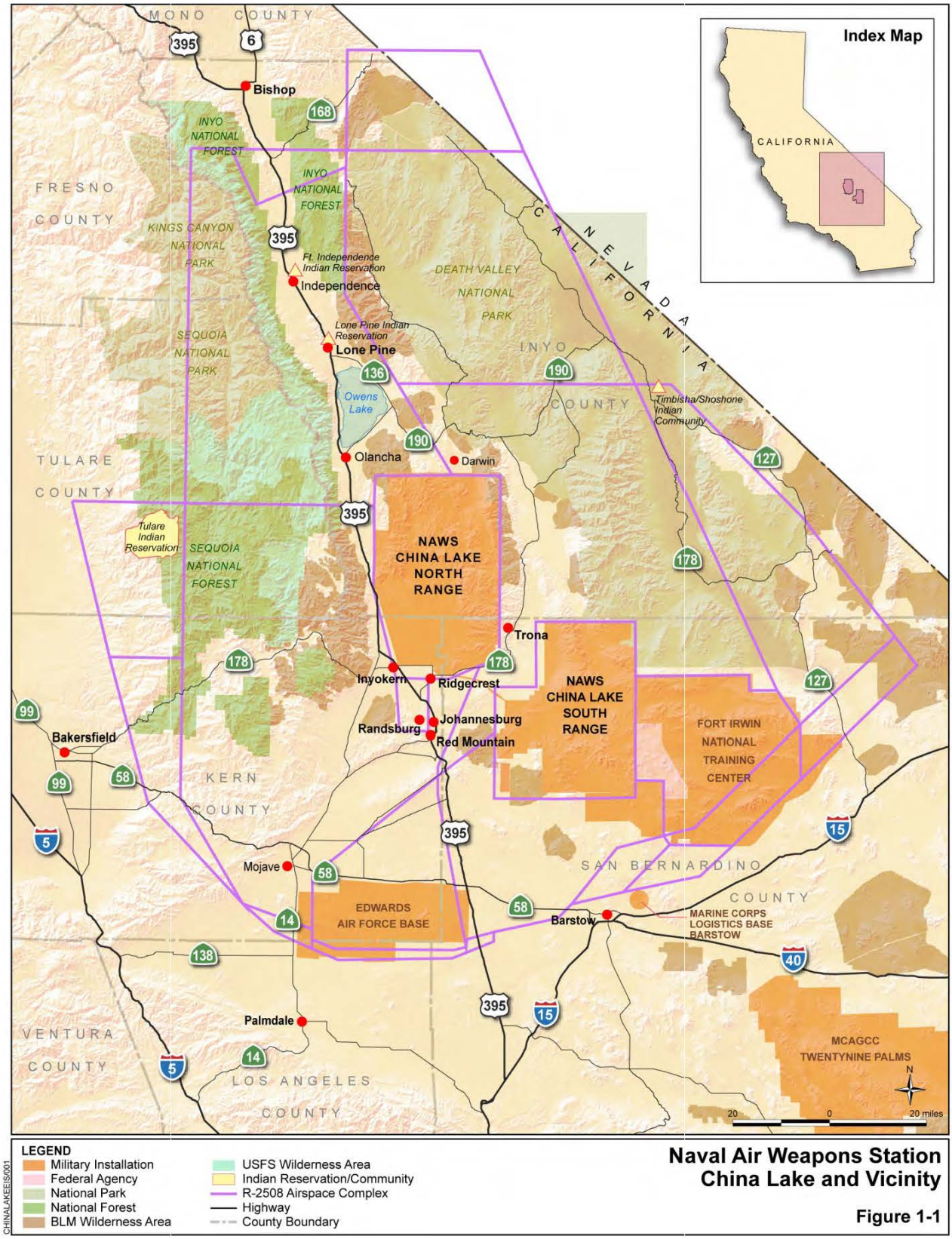
RDAT&E missions are needed to develop new weapons systems and ensure that weapons systems reliably perform to their designed specifications. In accomplishing this goal, NAWSCL provides a safe, operationally realistic, and thoroughly instrumented land range test and training environment that fulfills DoN and DoD RDAT&E requirements. The combination of the NAWSCL location, complex and varied terrain, widespread instrumentation sites, unique test capabilities, and highly skilled technical workforce provides the most advanced and efficient location of conducting critical RDAT&E necessary to maintain technical standards in the interest of national defense. The DoN recognizes that the diverse and well-equipped assets at NAWSCL are needed to support military readiness. The DoN also recognizes that the requirement for training in all aspects of weapons delivery continues to grow and that testing and training airspace (e.g., the R-2508 Airspace Complex) and NAWSCL ranges are critical to military readiness.

1.2.1 Land Withdrawal Renewal

The legislative authorization to withdraw 1,044,126 acres (422,544 hectares) of public land from BLM to the DoN was scheduled to expire, as specified by the CDPA, on October 31, 2014. Due to the continued DoN need for the withdrawn lands at NAWSCL, the DoN, in cooperation with BLM, prepared a Draft EIS/LEIS and requested that Congress reauthorize the land withdrawal in the fiscal year (FY) 2014 National Defense Authorization Act (NDAA) to allow for continued RDAT&E and training. The Draft LEIS was published on August 10, 2012 to meet the requirements of the CDPA. The FY 2014 NDAA was signed into law by the President on December 26, 2013 reauthorizing the land withdrawal until 2039.

BLM's involvement as a cooperating agency in the development of this EIS/LEIS was triggered by its current jurisdiction by law, and special expertise with respect to, the lands previously withdrawn for NAWSCL; its receipt of a public lands withdrawal application; and its responsibilities under Section 204 of the Federal Land Policy and Management Act of 1976 (FLPMA) (43 U.S.C. § 1701 et seq.) and the CDPA. BLM's responsibilities under the FLPMA and CDPA are to identify and submit the proposed renewal through the Secretary of the Interior to Congress, including providing the information identified in Section 204 (c)(2) of the FLPMA.

In accordance with the Engle Act of 1958 (Public Law [P.L.] 85-337) and FLPMA, the DoN was required to file an application with BLM requesting the Secretary of the Interior to process a proposed legislative withdrawal and reservation of public land to continue military RDAT&E and training activities on the NAWSCL ranges. With the land withdrawal now reauthorized, the Proposed Action continues the previous withdrawal of 1,044,126 acres (422,544 hectares) of public land for military use. The public land



Naval Air Weapons Station China Lake and Vicinity

Figure 1-1

Table 1-1
NAWSCL Organizations, Functions, and Missions

Organizations	Missions
NAWSCL – An Installation within Navy Region Southwest, which is under Commander, Navy Installations Command (CNIC)	Its mission is to operate and maintain base facilities and provide base support services, including airfields, for the NAWCWD organization at NAWSCL, assigned tenants and activities, and transient units.
NAWCWD – A division of Naval Air Systems Command (NAVAIR) and a tenant of NAWSCL	Its mission is to execute full-spectrum weapons and warfare systems RDAT&E.
EODTEUONE – A tenant of NAWSCL	Its mission is to provide and conduct rigorous, relevant and realistic training for EOD forces to persevere and triumph in all operating environments for the protection of American personnel, property, and mission accomplishment.
Naval Facilities Engineering Command Southwest (NAVFAC SW) – A tenant of NAWSCL and the N4 (facilities and environmental management) for NAWSCL	Its mission is the repair, maintenance, and construction of facilities and infrastructure as well as environmental management at NAWSCL.
Naval Construction Training Center (NCTC) Port Hueneme Detachment China Lake (Seabees) – A tenant of NAWSCL	Its mission is to prepare Seabees and airmen for success by providing top-notch training efficiently and safely.
Branch Health Clinic – A tenant of NAWSCL	Its mission is to deliver quality medical, dental, psychological healthcare, and services in a safe environment and be ready to deploy.
Navy Munitions Command Detachment China Lake – A tenant of NAWSCL	Its mission is to support NAWSCL, tenants, and visiting units with fleet munitions support.
Naval Engineering and Expeditionary Warfare Center Geothermal – A tenant of NAWSCL	Its mission is to explore for and oversee development of geothermal energy on DoD installations.
Air Test and Evaluation Squadron Nine (VX-9)	VX-9 conducts operational test and evaluation of new and newly modified aircraft systems and weapon systems under the direction of the Commander Operational Test and Evaluation Force. These systems are evaluated against operational measures of effectiveness and suitability. Additionally, VX-9 conducts Tactics Development and Evaluation for employment by operational forces.

remains withdrawn from all forms of appropriation under the public land laws, including surface entry, geothermal, mining, mineral leasing, and the Materials Act of 1947.

In accordance with 43 CFR Subpart 2310, the DoN submitted a land withdrawal renewal application to the Ridgecrest Field Office of BLM on June 13, 2011. The DoN applied for renewal of the 1,044,126 acres (422,544 hectares) currently withdrawn under the CDPA and administered as NAWSCL.

The DoN and BLM held three meetings to inform the public of the BLM's responsibility related to the withdrawal request. These meetings were announced in the Federal Register and local newspapers, and are discussed in Section 1.6 of this EIS/LEIS. Comments received during the public meetings were considered in the process by which the DoN assessed and determined the proper scope for the analysis in this EIS/LEIS.

The DoN, in coordination with BLM, prepared a draft legislative proposal to implement the land withdrawal request. The Department of the Interior (DoI) and DoN worked together to determine the best avenue to submit the legislation to Congress. The submittal included recommendations concerning the proposed legislation from the Secretary of the Interior. The DoN, in coordination with BLM, requested that Congress renew the land withdrawal in the FY 2014 NDAA. The FY 2014 NDAA was signed into law by the President on December 26, 2013 authorizing the land withdrawal renewal.

1.2.2 CLUMP Update

The passage of the CDPA in 1994 reauthorized the DoN's continued use of public withdrawn lands at NAWSCL to meet the Installation's established test and training requirements in support of the mission. The CDPA required the development of a land use management plan in accordance with the FLPMA of 1976. The 2005 CLUMP development process included an extensive needs assessment analysis that integrated input from NAWSCL and NAWCWD managers, customers, and staff, who were consulted to identify mission needs and potential improvements to existing land management processes. Land use and environmental resource management requirements were identified through internal discussions with senior managers, range managers, test planners, environmental planning and resource managers, land use planners, facilities planners, airfield operations personnel, legal counsel, and public affairs representatives. The general public; interested organizations; Native American tribes; and federal, state, and local agencies were also given an opportunity to participate with the DoN in the development of the CLUMP through briefings and NEPA public scoping meetings conducted throughout the region in support of the EIS/LEIS.

The 2005 CLUMP, endorsed by the NAWSCL Commanding Officer and BLM State Director, is the authorized land use management plan at NAWSCL; it will be updated to address mission, support, and compliance/stewardship requirements, as well as mission-compatible nonmilitary uses. In addition to the military land uses granted to the DoN in P.L. 103-433, the 2005 CLUMP authorized the following nonmilitary, but mission-compatible, land uses on NAWSCL: (1) Native American access; (2) education and research projects; (3) limited recreation; and (4) limited commercial uses, including geothermal leasing and development, and related power production activities. Implementation of the CLUMP includes implementation of the management guidelines set forth in the INRMP and ICRMP. The CLUMP incorporates the appropriate components of the following installation management plans:

- Naval Weapons Center China Lake Master Plan (U.S. Navy 1989a and 1989b);
- 2011 Range Complex Management Plan (U.S. Navy 2011a);
- 2011 Air Installation Compatible Use Zones (AICUZ) Update (U.S. Navy 2011h);
- Final Aircraft Noise Study for Naval Air Weapons Station China Lake (U.S. Navy 2011f);
- Integrated Natural Resources Management Plan 2000–2004 (see Section 1.2.2.1) (U.S. Navy 2014); and
- Integrated Cultural Resources Management Plan (see Section 1.2.2.2) (U.S. Navy 2012b).

1.2.2.1 INRMP

Although the 2014 INRMP is not part of the Proposed Action or alternatives, it is an element of the CLUMP resources management goals and guidelines. INRMP implementation is required by the Sikes Act. The Sikes Act requires the Secretary of Defense to carry out a program to provide for the conservation and rehabilitation of natural resources on military installations, sustainable multipurpose uses of resources, and public access for use of natural resources, subject to safety and military security considerations. To facilitate this program, the amendments require the secretaries of the military departments to prepare and implement INRMPs for each military installation in the United States unless the absence of significant natural resources on a particular installation makes preparation of an installation plan inappropriate. The INRMP must provide for management activities only to the extent that such activities are consistent with use of the installation for military preparedness.

INRMPs have specific goals that are shaped by the military mission, DoD guidelines and directives, pertinent laws and regulations, public needs, public values, ecological theory and practice, and management experience. Among the most important goals are the restoration, maintenance, and protection of biological diversity, biological integrity, and ecological health, while allowing for the military mission and appropriate human uses. As required by the Sikes Act, as amended, the INRMP, to the extent appropriate and applicable, provides for the following:

- No net loss in the capability of the Installation's lands to support the military mission of the Installation;
- Fish and wildlife management, land management, and fish- and wildlife-oriented recreation;
- Fish and wildlife habitat enhancement or modification;
- Wetland protection, enhancement, and restoration, where necessary, for support of fish, wildlife, or plants;
- Integration of, and consistency among, the various activities conducted under the approved INRMP and other NAWSCL management plans, as applicable;
- Establishment of specific natural resource management goals, objectives, and time frames for the Proposed Action;
- Sustainable use by the public of natural resources to the extent that the use is consistent with the military mission and the needs of fish and wildlife resources;
- Public access to the military Installation, subject to requirements necessary to ensure safety and military security, that is necessary or appropriate for the sustainable uses of natural resources;
- Enforcement of applicable natural resource laws (including regulations); and
- Such other activities as the DoN has determined are appropriate.

Implementation of a revised CLUMP would include the finalized update to the NAWSCL INRMP. The DoN notes that an update to the 2000 INRMP had been under development by the DoN and its regulatory partners (USFWS and CDFW) roughly concurrently with the EIS/LEIS. Therefore the 2000 INRMP was the version made available for review and comment during the reopened public comment period (see Section 1.7, Chapter 10.0, and Comment 13.1 in Table 10.1-2).

The INRMP update was completed and implemented in September 2014. The INRMP update supplants the 2000 INRMP and is the controlling guidance for management of natural resources at NAWSCL. One noteworthy change that occurred in the INRMP update, with respect to the management of feral horses and burros provides for the administering of fertility control measures, including contraceptives, to feral horses captured during regular horse gathers (as practiced historically) as a means of reaching the appropriate management level (AML) established for the feral horse population on NAWSCL. (See discussion of the Wild Horse and Burro Management Program [WHBMP] in Section 4.4.2.1) Implementation of the INRMP update reduces impacts to natural resources associated with any future DoN operations and other activities at NAWSCL, and thus ultimately is protective of and thus beneficial to natural resources.

1.2.2.2 ICRMP

Similar to the INRMP, the 2012 ICRMP is not part of the Proposed Action or alternatives, but is an element of the CLUMP resources management goals and guidelines. The NAWSCL ICRMP was implemented in 2012. The ICRMP provides an overview of the prehistory, history, and identified cultural resources of the Installation. Moreover, the ICRMP identifies processes for the management of cultural resources within specific areas of responsibility at NAWSCL, as it is the Installation's responsibility to consider the effects of its actions in order to avoid, minimize, or mitigate any impact to eligible cultural resources that might occur as a result of its actions. Other plans developed for management of cultural resources at NAWSCL include management strategies for the historic buildings on the Installation (Mikesell 1997).

1.2.3 Current and Evolving Military RDAT&E and Training

Testing and training are critical to the successful assessment, safe operation, and improvement of the capabilities of current and future weapon systems. NAWSCL ranges are used by U.S. and allied military services for the RDAT&E of land and air weapons systems, to provide realistic test and training opportunities, and to maintain the operational readiness of these forces. The strategic goal for NAWSCL is to be the DoN's premier land-based test and training center for weapons systems associated with air warfare, missiles and missile subsystems, aircraft weapons integration, directed energy (DE) weapons systems, and electronic warfare systems. In accomplishing this goal, NAWSCL provides safe, operationally realistic, and thoroughly instrumented land range test and training environment that fulfills DoN and DoD RDAT&E requirements. The combination of the NAWSCL location, complex and varied terrain, widespread instrumentation sites, unique test capabilities, and highly skilled technical workforce provides the most advanced and efficient method of conducting critical RDAT&E to maintain technical standards in the interest of national defense.

RDAT&E events are conducted on the full spectrum of air warfare and weapons systems at NAWSCL to validate the systems' capabilities and performance before deployment.

Research and development (R&D) supports all phases of weapon systems development, from the earliest concepts of a weapon to engineering and manufacturing to Fleet use. The goal of weapons R&D is to explore the use of promising technology to solve emerging war-fighter needs. At NAWSCL, research activities focus on the areas of weapons guidance and control, warheads, explosives, propellants, pyrotechnics, propulsion systems, airframes, and the basic chemistry and physics that support these areas.

Acquisition (A) involves procuring systems—in this case, weapons systems. NAWCWD supports the full spectrum of the defense acquisition programs by linking R&D with test and evaluation (T&E) throughout

the entire acquisition process. NAWCWD participates from early involvement through pre-production, post-production, and sustainment efforts to ensure successful acquisition programs.

Test and evaluation is a continuous process throughout the weapons system lifecycle. Weapons systems and components are tested and evaluated under natural operating conditions at NAWSCL to replicate realistic employment and operational scenarios to the maximum extent practicable.

In view of the need for realistic RDAT&E, the DoN has recognized that the diverse and well-equipped assets at NAWSCL are needed to support military readiness. The DoN also recognizes that the requirement for RDAT&E in all aspects of weapons delivery continues to grow, and that the need for RDAT&E airspace (e.g., the R-2508 Airspace Complex) and air-to-ground RDAT&E ranges at NAWSCL are critical to military readiness.

Training events are accommodated on a non-interference basis with the primary RDAT&E mission. These training events are required to certify that war fighters are fully qualified prior to deployment and are critical to ensuring that military services maximize their state of readiness. Readiness equates to military forces that are proficient at their jobs, ready to deploy quickly, capable of conducting joint (multiservice and/or multination) operations, and able to fight as effectively and safely as possible. Mastering complicated equipment, particularly current highly technological weapons systems, requires intensive and realistic training with that equipment (aircraft, weapons, and logistic support) on a simulated battlefield.

Major mission areas encompassing the RDAT&E and Fleet training supported at NAWSCL include:

- Air-to-Air
- Surface-to-Air
- Air-to-Ground
- Surface-to-Surface
- Energetics/Munitions
- Electromagnetics (including DE)
- Track Test

Based on identified and evolving RDAT&E and training needs, changes are proposed in current military RDAT&E and training events at NAWSCL, including increases in both air and ground activities. In addition, there would be an expansion of unmanned aerial and surface systems, as well as an expansion of existing and the introduction of evolving DE weapons development. Specific elements associated with the Proposed Action and alternatives are described in Chapter 2.

1.3 OVERVIEW OF NAWSCL

NAWSCL is located in the upper Mojave Desert of southeastern California and consists of two major land areas: the North Range, encompassing 606,926 acres (245,615 hectares), and the South Range, encompassing 503,510 acres (203,764 hectares) (Figures 1-2 and 1-3). The North Range lies in portions of Inyo, Kern, and San Bernardino counties, and the South Range is located entirely within San Bernardino County. The South Range eastern perimeter borders National Training Center Fort Irwin and the National Aeronautics and Space Administration (NASA) Goldstone Facility, and the northeast corner abuts Death Valley National Park (see Figure 1-1). BLM lands are adjacent to the North Range and between the North and South Ranges. NAWSCL is also within the R-2508 Airspace Complex, which includes approximately 19,600 square miles (50,764 square kilometers) of airspace in the upper Mojave Desert (see Figure 1-1). Management of military aircraft operations within the R-2508 Complex is performed by the R-2508 Joint Policy and Planning Board. The Joint Policy and Planning Board consists

of the Commanders of the NAWCWD, 412th Test Wing, Edwards Air Force Base, and National Training Center Fort Irwin.

Mainsite and Headquarters areas, which are in the southern boundary of the North Range, are about 150 miles (241 kilometers) northeast of Los Angeles in the northeast corner of Kern County. The incorporated city of Ridgecrest adjoins the Mainsite boundary on the south. Other nearby communities are Inyokern, 10 miles (16 kilometers) west of Mainsite, and Trona, 18 miles (29 kilometers) east of Mainsite.

NAWSCL encompasses approximately 1,700 square miles (4,403 square kilometers), or approximately 1.1 million acres (445,156 hectares) of remote, unpopulated desert land. In addition to extensive test and training ranges, the Installation has several developed areas: Mainsite, Armitage Airfield, the Propulsion Laboratories, and the Coso Known Geothermal Resource Area (KGRA) within the North Range. The primary developed area in the South Range is the Electronic Combat Range (ECR) central site.

Throughout its history, the DoN at NAWSCL has supported both Naval and DoD air weapons systems RDAT&E needs. Military activities at this site began during the DoN's rapidly expanding air combat role during World War II. The site was officially established as the Naval Ordnance Test Station, Inyokern, California, on November 8, 1943. In response to increasing capabilities, the Naval Ordnance Test Station was renamed the Naval Weapons Center, China Lake, in July 1967. On January 22, 1992, Naval Weapons Center merged with NAWCWD, an operational division of Naval Air Systems Command (NAVAIR).

NAWCWD's mission is to provide Naval forces with effective and affordable integrated warfare systems and lifecycle support to ensure battle space dominance. This mission is accomplished through NAWCWD's extensive test and training programs. In 2003, NAWCWD was reorganized and the Installation command was placed under the Commander, Navy Installations Command.

Test and training programs conducted on NAWSCL land ranges are managed by an integrated NAWCWD management team, with the Commander headquartered at NAWSCL. Land use management and environmental compliance are the responsibility of the Commanding Officer of NAWSCL, who reports to the Navy Regions Southwest Regional Commander. In this capacity, NAWSCL is responsible for developing the CLUMP and serves as the land manager of all NAWSCL lands, while NAWCWD is the primary user.

Although NAWSCL lands are authorized for DoN use, they are also used by other military services (i.e., Marine Corps, Air Force, and Army) and other government agencies, including the Department of Energy and NASA. Commercial customers pursuing independent testing or research and foreign nations (allied forces) also use NAWSCL facilities to meet their test and training needs.

1.4 ENVIRONMENTAL IMPACT ANALYSIS PROCESS

Congress established a national policy to protect the environment and ensure that federal agencies consider the environmental effects of major federal actions in their decision making. CEQ is authorized to oversee and recommend national policies to improve the quality of the environment and has published regulations that describe how NEPA should be implemented by federal agencies. CEQ regulations encourage federal agencies to develop and implement procedures that address the NEPA process to avoid or minimize adverse effects on the environment. Procedures for implementing NEPA as part of the DoN planning and decision-making process are addressed in 32 CFR § 775.

NEPA, CEQ regulations, and 32 CFR § 775 provide guidance on the types of actions for which an EIS must be prepared. Once it has been determined that an EIS must be prepared, the proponent must publish a Notice of Intent (NOI) to prepare an EIS. This formal announcement signifies the beginning of the scoping period, during which the major environmental issues to be addressed in the EIS are identified. The scoping process provides an opportunity for the public to provide meaningful input into the development of the EIS. This input is considered in the preparation of the Draft EIS.

The Draft EIS is filed with USEPA and is circulated to interested public and government agencies for a period of at least 45 days for review and comment. During this period, public hearings may be held so that the proponent can summarize the findings of the analysis and receive input from the public. At the end of the review period, all substantive comments received must be addressed. A Final EIS is produced that contains responses to comments, as well as changes to the document, if necessary.

The Final EIS is then filed with USEPA and distributed in the same manner as the Draft EIS. Once the Final EIS has been available for at least 30 days, the federal agency may sign the Record of Decision (ROD) for the action.

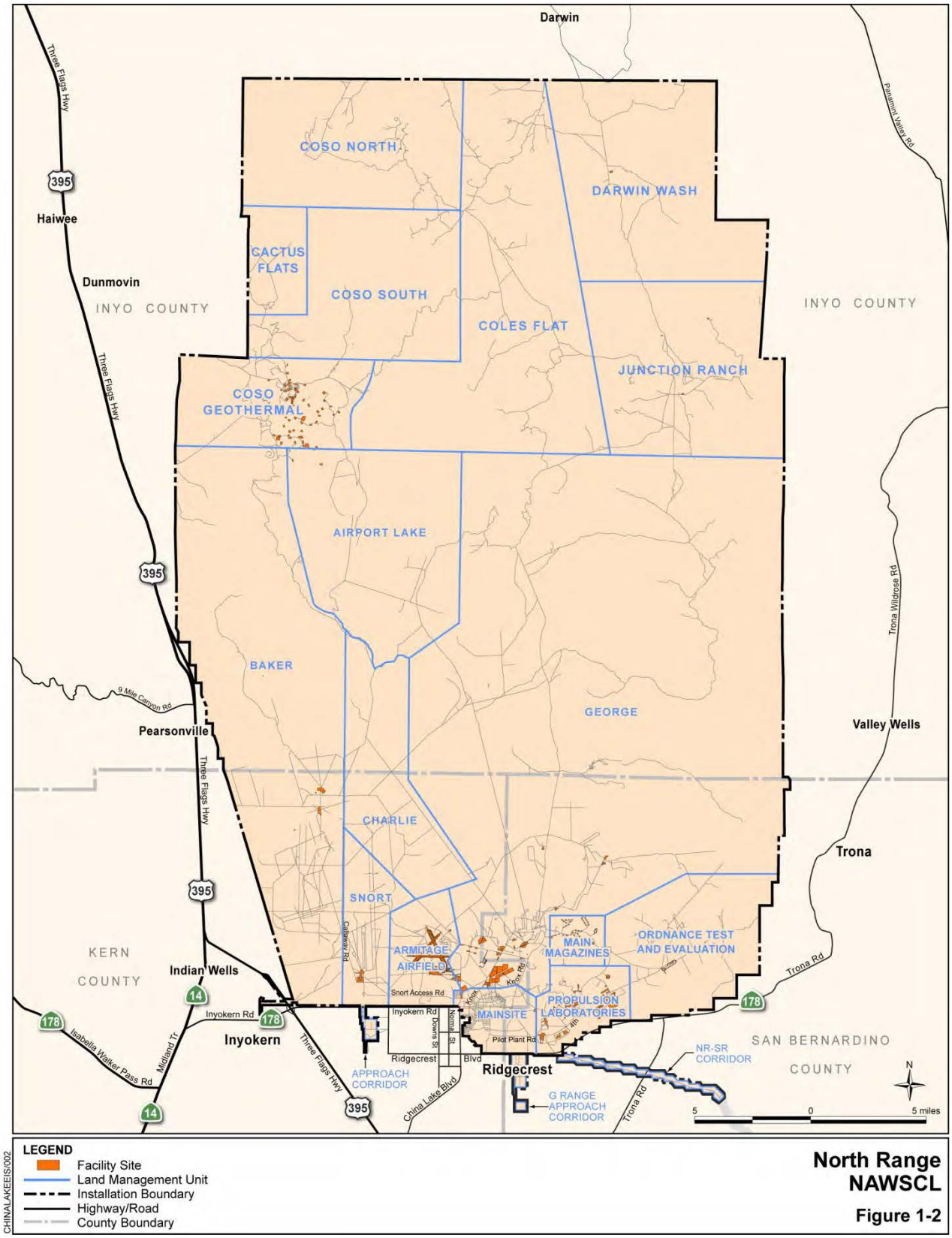
1.4.1 EIS and LEIS

The CDPA provided that the DoN could seek reauthorization of the NAWSCL public land withdrawal, which was scheduled to expire on October 31, 2014. In connection with the application for reauthorization, the CDPA specifies that the Secretary of the DoN would publish a Draft EIS consistent with the requirements of NEPA if there is a continuing requirement for military use of this range. The reauthorization of the land withdrawal that was included in the Proposed Action could only be extended by an act or joint resolution of Congress.

This EIS/LEIS supports two separate decisions made by two separate decision-making bodies. First, it served as the detailed statement required by the CDPA to be provided to Congress in conjunction with any subsequent request by the Navy to renew all or part of the CDPA-established withdrawal of public lands for the benefit of NAWSCL. As such, it enabled Congress to make environmentally informed decisions regarding the NAWSCL land withdrawal and served Congress in its decision to include reauthorization of the land withdrawal within the FY 2014 NDAA signed into law by the President in December 2013. The No Action Alternative (Alternative 3) as described in the Draft EIS/LEIS provided Congress with information on the environmental consequences of not reauthorizing the withdrawal (Table 1-2). This EIS/LEIS served as part of the formal transmittal of a legislative proposal to Congress. It was published on August 10, 2012 and made available to Congress in time for hearings and deliberations (40 CFR § 1506.8).

The EIS/LEIS serves as the environmental impact analysis informing the decision about whether to increase RDAT&E and training tempo by up to 25 percent (Proposed Action [Alternative 1]) or to maintain current RDAT&E and training levels and tempos (Baseline Alternative/Updated No Action Alternative [Alternative 2], also considered the “No Action Alternative” with respect to DoN decision making). The Navy would also decide on implementation of the updated CLUMP. Table 1-2 shows the EIS/LEIS actions, decisions, and tentative timelines.

Therefore, pursuant to the NEPA process, the DoN has prepared this Final EIS/LEIS and the USEPA has published a Notice of Availability of the Final EIS/LEIS in the Federal Register. The DoN will prepare a ROD for the DoN action; however, there will not be a ROD for the legislative component of the EIS/LEIS, because the decision to renew the withdrawal was made by the U.S. Congress and signed into law by the President.


Darwin
Three Flags Hwy
Panamint Valley Rd
COSO NORTH
DARWIN WASH
CACTUS FLATS
COSO SOUTH
COLES FLAT
JUNCTION RANCH
COSO GEOTHERMAL
AIRPORT LAKE
BAKER
GEORGE
CHARLIE
SNORT
ARMITAGE AIRFIELD
MAIN MAGAZINES
ORDNANCE TEST AND EVALUATION
MAINSITE
PROPULSION LABORATORIES
Haiwee
Dunmovin
INYO COUNTY
INYO COUNTY
Pearsonville
Valley Wells
Trona
Trona Wildrose Rd
9 Mile Canyon Rd
Calloway Rd
Knox Rd
Snort Access Rd
Inyokern Rd
Pilot Plant Rd
Downs St
Norma St
Ridgecrest Blvd
Trona Rd
KERN COUNTY
Indian Wells
Inyokern
Isabella Walker Pass Rd
Midland Tr
APPROACH CORRIDOR
China Lake Blvd
Ridgecrest
G RANGE APPROACH CORRIDOR
NR-SR CORRIDOR
SAN BERNARDINO COUNTY
395
14
178
N
5
0
5 miles
LEGEND
Facility Site
Land Management Unit
Installation Boundary
Highway/Road
County Boundary
CHINALAKEEIS/002
North Range
NAWSCL
Figure 1-2

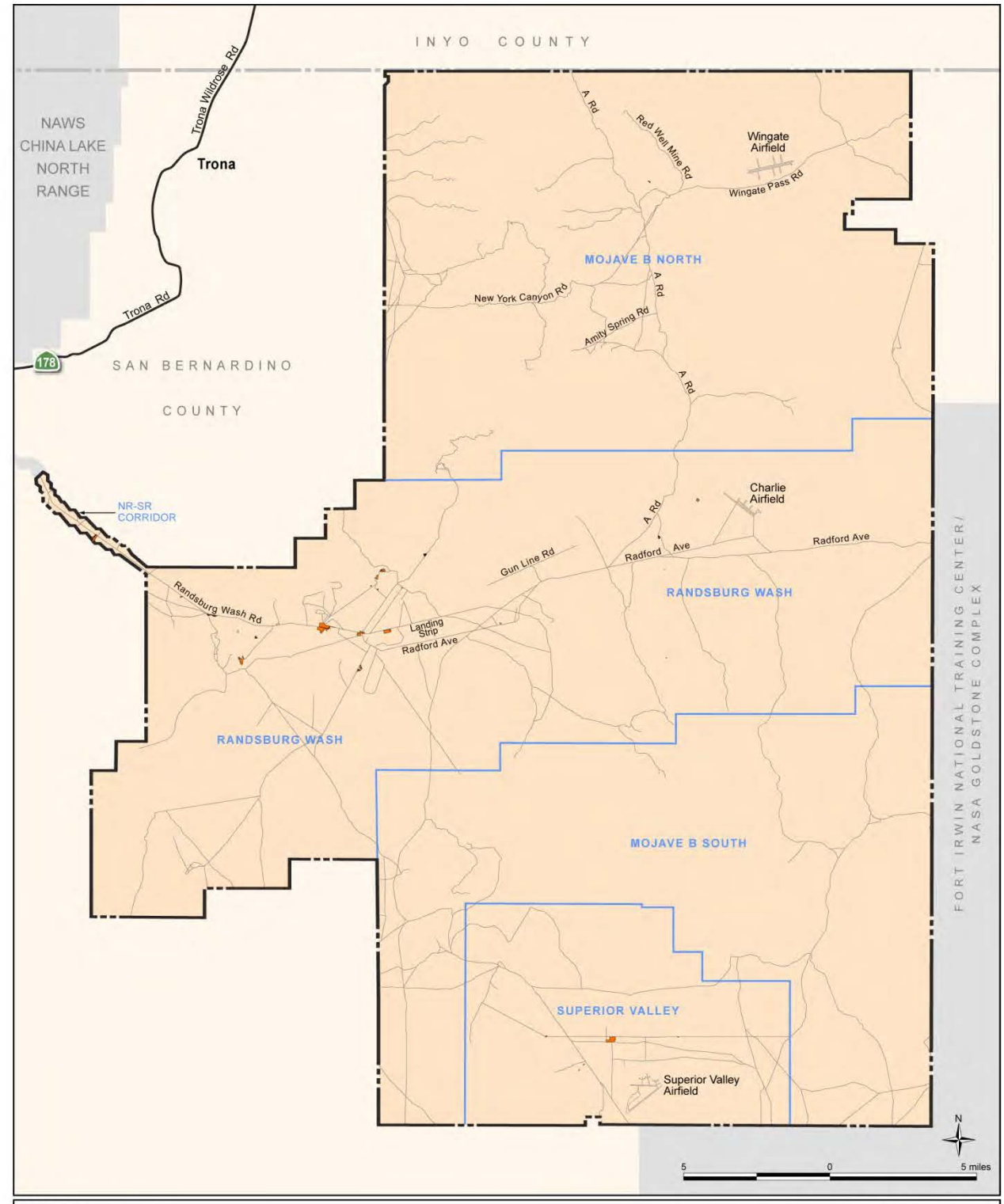

INYO COUNTY
NAWS CHINA LAKE NORTH RANGE
Trona Wildrose Rd
Trona
Trona Rd
178
SAN BERNARDINO COUNTY
NR-SR CORRIDOR
A Rd
Red Well Mine Rd
Wingate Airfield
Wingate Pass Rd
MOJAVE B NORTH
New York Canyon Rd
Amity Spring Rd
Charlie Airfield
Gun Line Rd
Radford Ave
Randsburg Wash Rd
Landing Strip
RANDSBURG WASH
MOJAVE B SOUTH
SUPERIOR VALLEY
Superior Valley Airfield
FORT IRWIN NATIONAL TRAINING CENTER/ NASA GOLDSTONE COMPLEX
N
5 0 5 miles
LEGEND
Facility Site
Land Management Unit
Installation Boundary
Highway/Road
County Boundary
CHINALAKEEIS/003
South Range NAWSCL
Figure 1-3

Table 1-2
EIS/LEIS Decision Summary

	Action	Decision Document	Decision Maker	Timeline
EIS	Interim decision on whether to increase tempo and/or update the CLUMP accordingly (Proposed Action [Alternative 1]) or whether to update the CLUMP based on current conditions (Baseline Alternative/Updated No Action Alternative [Alternative 2]), which is the "No Action Alternative" with respect to the EIS)	ROD	DoN	2014
LEIS	Renewal (Alternatives 1 or 2) or non-renewal (No Action Alternative [Alternative 3]) of land withdrawal	Legislation	Congress	2014

1.5 RELATED ENVIRONMENTAL DOCUMENTS

According to CEQ regulations for implementing NEPA, "material relevant to an EIS may be incorporated by reference with the intent of reducing the size of the document." A number of programs and projects at NAWSCL have undergone environmental review and documentation to ensure NEPA compliance. In addition, other technical studies have been conducted at NAWSCL and elsewhere to address specific topics of interest.

These related documents are referenced because the actions addressed are applicable to the ongoing mission of NAWSCL and are integral to this EIS/LEIS and accompanying CLUMP. Documents incorporated by reference are kept on file at the NAWSCL Environmental Management Division (EMD) and include the following:

- Feral Burro Management Program, Final Environmental Impact Statement, Navy, October 1981 (U.S. Navy 1981). This EIS analyzed the potential environmental consequences of implementing the NAWSCL Feral Burro Management Program, which considers various scenarios for cost-effective management of burros on the Installation.
- Interim Wild Horse Management Program, Environmental Assessment, Navy, November 1982 (U.S. Navy 1982). This Environmental Assessment (EA) analyzed the potential environmental consequences of implementing the interim NAWSCL Wild Horse Management Program, which considers various scenarios for cost-effective management of wild horses on the Installation.
- Integrated Natural Resources Management Plan (U.S. Navy 2014). The INRMP provides NAWSCL a long-term, viable framework for managing natural resources on lands it owns or

controls. Implementation of the INRMP is required by the Sikes Act and is the primary means by which natural resources compliance and stewardship priorities are set, and funding requirements are determined for the DoD.

- Integrated Cultural Resources Management Plan (U.S., Navy 2012b) and its implementing Programmatic Agreement (PA) (U.S. Navy 2012a). The ICRMP provides an overview of the prehistory, history, and identified cultural resources of the Installation. The ICRMP also identifies processes for the management of cultural resources within specific areas of responsibility at NAWSCL, as it is the installation's responsibility to consider the effects of its actions in order to avoid, minimize, or mitigate any impact to eligible cultural resources that might occur as a result of its actions.

- Comprehensive Land Use Management Plan (CLUMP) for Naval Air Weapons Station China Lake, CA (U.S. Navy 2005a). The CLUMP is the authorized land use management plan at NAWSCL that addresses mission, support, and compliance/stewardship requirements, as well as mission-compatible nonmilitary uses. The CLUMP authorizes nonmilitary, but mission-compatible, land uses on NAWSCL such as Native American access; education and research projects; limited recreation; and limited commercial uses, including geothermal leasing and development, and related power production activities. Implementation of the CLUMP includes implementation of the management guidelines set forth in the INRMP and ICRMP.

- Final Environmental Assessment for the Construction and Use of the Naval Expeditionary Combat Command Training Complex at the Naval Air Weapons Station, China Lake, California (U.S. Navy 2006b). This EA analyzed the potential environmental consequences of establishing a special combat training range complex at NAWSCL. Personnel of the Naval Expeditionary Combat Command and other operational forces would use this training complex for the efficient conduct of advanced, pre-deployment combat skills training.

- Final Realignment and Development of a Weapons Survivability Complex at Naval Air Weapons Station China Lake, California Environmental Assessment (U.S. Navy 2007b). This EA described the potential environmental consequences resulting from the proposed realignment of Wright-Patterson Air Force Base's (AFB) Fixed-Wing Live Fire Test and Evaluation (LFT&E) activities to NAWSCL. The Proposed Action would provide the DoD with essential LFT&E capabilities to ensure that aircraft, weapons systems, and mission-essential equipment are capable of achieving optimal survivability in a hostile environment.

- Proposed Military Operational Increases and Implementation of Associated Comprehensive Land Use and Integrated Natural Resources Management Plans, Final EIS, Navy, February 2004 (U.S. Navy 2004a). This EIS analyzed the potential environmental consequences resulting from the DoN's proposed action to increase the tempo of military RDAT&E and training activities conducted at NAWSCL. Any land use changes that would result from a decision to accommodate an increase in military operations would be reflected in the NAWSCL CLUMP.

- Final Environmental Assessment/Overseas Environmental Assessment, F-35 Joint Strike Fighter Initial Operational Test and Evaluation, September 2009 (U.S. Air Force 2009b). This EA analyzed the potential environmental consequences associated with implementation of the F-35 Joint Strike Fighter Initial Operational Test and Evaluation at multiple military installations and ranges including NAWSCL.

- The U.S. Fish and Wildlife Service (USFWS) issued a Biological Opinion (BO) to NAWSCL on February 19, 2013 regarding the renewal of the NAWSCL public lands withdrawal (5090 Ser PR242/397)(8-8-12-F-29). Their BO was based on a review of the then-proposed land withdrawal renewal and its effects on the federally endangered desert tortoise (*Gopherus agassizii*) and its critical habitat. USFWS concluded that the proposed action is not likely to jeopardize the continued existence of the desert tortoise. USFWS also concurred with the DoN's determination that the proposed action is not likely to adversely affect the southwestern willow flycatcher (*Empidonax traillii extimus*) or least Bell's vireo (*Vireo bellii pusillus*) (USFWS 2013a).

- 2007 AICUZ Study was developed to characterize noise exposure footprints associated with current and projected airfield flight events, identify Accident Potential Zones (APZs), update land use compatibility guidelines for noise levels, and provide recommendations for land use planning and management for NAWSCL and surrounding communities (U.S. Navy 2007a).

- 2011 AICUZ Update was prepared to incorporate several aircraft noise studies that were completed since the 2007 AICUZ Study and to update noise contours around the airfield due to changes in aircraft events. These studies included a November 2008 noise study, an August 2009 noise study, and an April 2010 noise study, all depicting noise contours around the airfield. The 2011 AICUZ Update characterizes noise exposure footprints associated with current and projected airfield flight events, identifies APZs, updates land use compatibility guidelines for noise levels, and provides recommendations for land use planning and management for NAWSCL and surrounding communities (U.S. Navy 2011h).

The DoN notes that certain documents referenced here in Section 1.5 represent management plans that likely would be updated at some point during any ongoing/future use of NAWSCL by the DoN. Accordingly, references to such documents or plans both here in Section 1.5 and throughout the Final EIS/LEIS should be understood as including current versions of such documents or plans and any successor versions as well.

1.6 PUBLIC INVOLVEMENT

As part of this EIS/LEIS, the DoN conducted a public participation process to solicit input from interested parties, including the general public; local, state, and federal agencies; and Native American tribes. This public participation process provided an opportunity for these parties to offer meaningful input into the development of the EIS/LEIS. These parties were encouraged to provide suggestions and concerns about the Proposed Action, alternative actions analyzed, resource issues analyzed, and the environmental effects analysis.

The NOI (Appendix A) to prepare this EIS/LEIS for renewing the land withdrawal to allow for continued defense-related RDAT&E at NAWSCL (along with the other components of the Proposed Action [Alternative 1]) was published in the Federal Register on June 10, 2011. The public was notified through local media, as well as through letters sent to federal, state, and local agencies and officials; Native American tribes; and interested groups and individuals.

Public meetings were held on the following dates to provide information to the public and solicit their comments and concerns:

- July 19, 2011 at the Historic USO Building, 230 West Ridgecrest Boulevard, Ridgecrest, California;

- July 20, 2011 at Statham Hall, 138 Jackson Street, Lone Pine, California; and

- July 21, 2011 at the Trona Community Senior Center, 13187 Market Street, Trona, California.

At each of these meetings, information was presented about the meeting's objectives, the process and purpose for the development of the EIS/LEIS, and the opportunities for public input. In addition to verbal comments, written comments were received during the scoping process. These comments, as well as experience with similar programs and the requirements of NEPA and its implementing regulations, were used to help determine the scope and direction of studies/analysis to accomplish this EIS/LEIS.

During the scoping process, written and oral comments were received from individuals; interested groups; federal, state, and local agencies; and Native American tribes. The DoN considered all comments

received during the scoping process when determining the issues to be evaluated in the EIS/LEIS. Issues identified during public scoping included the following:

Land Use and Public Access

- Impacts from military overflights;
- Restricted access to Native American sites, including Coso Hot Springs and Prayer Site and petroglyphs on the Installation;
- Restricted access to public lands for recreation;
- Health and safety risks from NAWSCL missions; and
- Impacts from the operation of geothermal facilities located within the project area.

Cultural Resources

- Impacts on the tribal use of Coso Hot Springs and Prayer Site;
- Concern over restricted access to petroglyphs;
- Impacts on archaeological resources during construction; and
- Need for formal tribal consultation.

Water Resources

- Impacts on surface water and groundwater upstream and downstream of the project area;
- Impacts on the Rose Valley Water Basin from DoN use of groundwater and from geothermal plant operations;
- Storm-water-related impacts, including post-construction hydrologic impacts;
- Potential impacts from recycled water use and discharge; and
- Consideration for a long-term easement that would allow the Darwin Community Services District to access Coso Cold Springs.

Biological Resources

- Impacts on aquatic and terrestrial habitat from fragmentation of streams, riparian areas, or other waters;
- Impacts on flora and fauna, especially threatened and endangered species;
- Noise impacts on wildlife;
- Consideration for the reintroduction of antelope on the Installation;
- Consideration for partnerships to maintain guzzlers for wildlife on the Installation; and
- Consideration of options for the management of wild horses and burros.

Hazardous Materials, Hazardous Waste, Contamination

- Contamination to air, water, and land from munitions constituents;
- Spill prevention and response action plan to protect water quality from spills;
- Impacts resulting from hazardous materials corrective action obligations; and

- Consideration for a plan for the cleanup and reclamation of the project site for future nonmilitary use.

Socioeconomics

- Socioeconomic effects of NAWSCL on Inyo County; and
- Cost of continuing the proposed withdrawal (approved as of December 2013).

Circulation and Traffic

- Impacts on local streets in Ridgecrest, and subsequent mitigation; and
- Desire to see the road between the ranges remain open for public use.

Noise

- Identification of areas of frequent noise complaints; and
- Concerns with the 2011 AICUZ Update.

Air Quality

- Potential air quality impacts.

Airspace

- Impacts on general aviation airspace navigation; and
- Rerouting of general aviation air traffic that could result in environmental impacts from consumption of extra fuel, more carbon and combustion products, and noise.

Cumulative Impacts

- Desire to see cumulative and indirect impacts analyzed for each fully analyzed alternative;
- Cumulative impacts of the withdrawal of public lands for DoD installations throughout Southern California; and
- Concerns about cumulative impacts and desire for analysis to be integrated with the discussions of resource impacts instead of discussed in a separate chapter.

Other

- Desire for documentation of current stewardship practices, all resource monitoring, and reporting during current land withdrawal;
- Consideration for a joint NEPA/California Environmental Quality Act (CEQA) document;
- Desire for additional and ongoing community outreach to communities; and
- Consideration for BLM to have a lead role in the LEIS process.

1.6.1 Tribal Meetings

NAWSCL has engaged in four government-to-government outreach efforts with area Tribes in relation to the land withdrawal EIS/LEIS. These efforts include a Native American scoping meeting in Bishop, California on July 20, 2011, a formal Section 106 consultation meeting in Big Pine, California on March 20, 2012, a DoN/Tribal Leadership meeting in Bridgeport, California on April 26, 2012, and a Coso Access Agreement Meeting conducted on February 13, 2013.

Scoping Meeting. The EIS/LEIS Scoping meeting was well attended by members of area Tribes and organizations. DoN presenters addressed a number of general and specific questions posed by Tribal

members. The Tribal comments on the EIS/LEIS focused on the Coso Hot Springs area and included concerns regarding perceived changes to the condition of the springs, access to the area for traditional purposes, concerns about DoN management of the springs, potential effects of the Coso Geothermal energy development operations on this area, and Tribal interest in the acquisition of land management authority for the Coso Hot Springs and Prayer Site locations.

The DoN EIS/LEIS team carefully reviewed Tribal comments, prepared responses to each comment, and incorporated those responses in the draft EIS/LEIS document.

Consultation Meeting. NAWSCL initiated formal Section 106 Consultation with the Tribes and conducted the first meeting in Big Pine on March 20, 2012. The NAWSCL Commanding Officer provided a summary of the DoN responses to Tribal comments. Ensuing dialogue was candid and respectful. It focused on three principal areas of Tribal concern: transfer of land ownership and management authority to the Tribes, improving Tribal access to the Coso Hot Springs, and concerns regarding the observed changes to water levels and temperatures at Coso Hot Springs.

The NAWSCL Commanding Officer addressed Tribal questions and comments. The initial questions related to Tribal requests to include a land ownership transfer alternative in the EIS/LEIS. NAWSCL responded that this proposal was carefully reviewed by DoN managers at the China Lake and Region level. DoN review concluded that the potential loss of the lands being requested presented a significant safety and security risk to the China Lake mission. The Commanding Officer further explained that the EIS/LEIS will identify the Tribes land ownership transfer proposal as an alternative given careful consideration but not carried forward for further review because it did not meet the DoN's identified purpose and need for the undertaking.

The Tribes questioned who in the DoN has land ownership authority. NAWSCL agreed to inquire and share this information with the Tribes. The NAWSCL Commanding Officer also addressed Tribal concerns about access to the Coso Hot Springs noting the DoN's interest in working with the Tribes to revise the 1979 Access Memorandum of Agreement (MOA) to better accommodate Tribal access to the Coso Hot Springs area in a manner that is compatible with DoN safety and security requirements. As a result of Government to Government dialogue between the participating Tribes and the DoN by and through the NAWSCL Commanding Officer, a new MOA was developed in January 2014 to improve access to Coso Hot Springs. The new agreement makes provision for increased access to Coso Hot Springs, by descendants of indigenous peoples that inhabited lands and/or conducted traditional cultural activities within the boundaries of NAWSCL, for the purpose of continued traditional cultural observances and practices. As of this writing, the new MOA has been signed by the DoN and one Tribe (Timbisha Shoshone). Discussion regarding the observed physical changes to the water temperatures and levels at the Coso Hot Springs focused on the technical studies that have been performed by DoN and Tribal consultants, and the potential need for additional studies.

Leadership Meeting. This meeting was hosted by the Bridgeport Indian Colony and was attended by members of seven Tribes, the NAWSCL Commanding Officer, and assigned staff. Discussions provided supplemental information regarding Tribal concerns or areas of interest identified in EIS/LEIS comments. The NAWSCL Commanding Officer reported the DoN point of contact for land ownership matters is the Secretary of the Navy, the Honorable Ray Mabus. Tribes again stated their interest in acquiring land ownership of the Coso Hot Springs and Prayer Site and informed the DoN of their intention to pursue that interest through the Secretary's office.

Ensuing dialogue focused on Tribal interests in physical improvements at Coso Hot Springs that could facilitate their visits such as the construction of a shade structure, wind-breaks, and a sweat hut for their

ceremonies. All agreed these initial proposals were good ideas that needed more discussion. These items will be discussed again at the next Leadership meeting.

The NAWSCL Commanding Officer further described several proposed refinements to the 1979 Coso Hot Springs Access MOA. The proposed improvements would accommodate an increased number of annual visits including the accommodation of "emergent need" visits via implementation protocol for visits, streamline and shorten the coordination procedures, and implement a "self-reliant" access process that would allow trained Tribal leaders to escort their own groups to the Coso Hot Springs.

The escort training would be similar to the certification process NAWSCL currently applies for visitor escorts to Little Petroglyph Canyon. The escort training focuses on safety, security, and environmental resources sensitivity requirements. All participants responded favorably to these potential process improvements and agreed these ideas needed further discussion and refinement. The DoN and Tribes agreed to continue these discussions at their next Consultation or Leadership meeting.

Coso Access Agreement Meeting. During this meeting, the DoN and Tribes discussed the Coso Access Agreement (update to the 1979 MOA). The discussion focused on ways to identify and mark dangerous areas within the Coso Hot Springs Site in an effort to allow greater access to the area; the DoN provided maps depicting areas that have been cleared of possible unexploded ordnance (UXO) concerns that may exist in or near the Coso Hot Springs Site. The Tribes requested information related to the mineral and chemical contents of the water within the hot springs. These data are available in the annual Coso Hot Springs Monitoring Reports.

1.7 PUBLIC COMMENT PROCESS

The Draft EIS/LEIS was made available for public review and comment from August 10, 2012 to November 8, 2012 (90 days).

Public meetings were held on the following dates to present the findings of the Draft EIS/LEIS and to invite the public to make comments:

- October 2, 2012 at the Springhill Suites, 113 E. Sydnor Avenue, Ridgecrest, California;
- October 3, 2012 at the Trona Community Senior Center, 13187 Market Street, Trona, California; and
- October 4, 2012 at Statham Hall, 138 Jackson Street, Lone Pine, California.

Because several of the comments received requested additional source documentation that was used during the preparation of the EIS/LEIS, an additional 30-day public review period occurred from January 11, 2013 to February 11, 2013. Public comments received at the meetings and during the review periods were reviewed and appropriately incorporated in this Final EIS/LEIS. Responses to public comments are presented in Chapter 10 of this document. The Final EIS/LEIS will be available for a 30-day review period prior to publication of the DoN's ROD. The ROD will be published in the Federal Register.

1.7.1 Changes from the Draft EIS/LEIS to the Final EIS/LEIS

The text of this EIS/LEIS has been revised, when appropriate, to reflect concerns expressed in public comments. With the President signing the FY 2014 NDAA into law on December 26, 2013, the public land withdrawal at NAWSCL was reauthorized until 2039. Therefore, for the purposes of the Final EIS/LEIS, the Baseline Alternative/Updated No Action Alternative is considered to effectively represent "no action" conditions or status quo. Analysis of the No Action Alternative as presented in the Draft EIS/LEIS has

been removed from the Final EIS/LEIS. The responses to the comments indicate the relevant sections of the EIS/LEIS that have been revised. The major comments received on the Draft EIS/LEIS were:

- Reopening of the EIS for review Recommendation that the DoN retract the public submittal of the EIS/LEIS and resubmit when appropriate data have been obtained and appropriate analysis has been performed and necessary documents are available for public inspection.
- Availability of Support Documents The INRMP, ICRMP, PA, previous CLUMP, and other associated documents should be provided to the public to facilitate review of the EIS/LEIS.
- Update of Support Documents The INRMP and other referenced documents are out of date and should be updated to support analysis presented in the EIS/LEIS.
- Cumulative Effects Cumulative impacts of the withdrawal of public lands for DoD installations throughout Southern California should be addressed in the EIS/LEIS.
- Aviation Safety Studies should be conducted to evaluate noise and safety impacts from flight route changes from the 2007 AICUZ Study to the 2011 AICUZ Update.
- Airfield Operations Request that the EIS/LEIS describe the allocation of aircraft to routes included in the 2011 AICUZ Update and the justification behind the allocation.
- Noise Mitigation measures need to be specific to noise mitigation or need to reference the 2011 AICUZ Update noise mitigation. Specific mitigation measures to address noise levels in areas that exceed the Noise Zone II threshold should be provided.
- Fire Management The EIS/LEIS should clarify the NAWSCL fire management strategy as it relates to prevention and control of fires in association with NAWSCL natural resources.
- Paleontological Resources Information on paleontological resources within NAWSCL should be included in the EIS/LEIS.
- Transfer of Coso Hot Springs Recommendation to transfer ownership of the Coso Hot Springs land to the Tribes or a Tribal controlled entity should be included in the range of alternatives when considering future land withdrawal.
- Coso Hot Springs Suggestion that the onset of geothermal activity is correlated with, and is the most likely cause for, the perceptible change to the Coso Hot Springs. The EIS/LEIS should identify the types of mitigation measures that would be proposed should changes to the surface activity of the Hot Springs occur as a result of geothermal development.
- Mineral Resources Development of mineral resources within NAWSCL should be considered and potential impacts to known mineral resources should be addressed.
- Darwin Water Supply The EIS/LEIS should clarify that the Darwin Community Services District has rights to access its historical water source, Coso Cold Springs, which is within NAWSCL boundaries.
- CLUMP The CLUMP update provided in the EIS/LEIS is incomplete and must note changes in the text or have discernible revisions from the previous CLUMP for adequate public review.

Based on the comments above and more recent studies (e.g., ICRMP), the following actions were taken or changes were made to the EIS/LEIS:

- Reopening of the EIS for review Reopening of the Draft EIS/LEIS for public review was performed from January 11, 2013 to February 11, 2013. Comments received during the reopening of the comment period were not substantially different from those received during the initial review

period. After further review of the affected environment and environmental consequences sections of the EIS/LEIS, the DoN determined that the potential effects of the Proposed Action and alternatives were appropriately addressed and retraction and resubmittal of the EIS/LEIS was not warranted. Appropriate background documentation was provided on the project website at www.Chinalakeleis.com.

- Availability of Support Documents During the reopened public comment period, the Draft EIS/LEIS and additional key reference materials were made available for public review at information repositories or via the project website at www.ChinalakeLEIS.com.

- Mitigation Measures This heading has been changed throughout Chapter 4 to Mitigation Measures and Impact Avoidance and Minimization Measures. This was done to clarify the different types of measures.

- Cumulative Effects Text has been added to Section 2.4 regarding DoD land withdrawals in Southern California that are planned or have recently been approved and future agricultural development in the region. Text has also been added to Section 4 cumulative resources sections regarding potential cumulative effects of other DoD land withdrawal activities and future agricultural development in the region.

- Fire Management Sections 3.4 and 4.4 of the EIS/LEIS have been revised to clarify that NAWSCL is preparing a Fire Management Plan (FMP). Currently, the Installation does not maintain a formal fire management policy, but has developed a fire management strategy that supports the NAWSCL mission, while taking natural resource protection into consideration.

- Paleontological Resources Sections 3.5 and 4.5 of the EIS/LEIS have been revised to incorporate paleontological documentation available within the NAWSCL ICRMP.

- Mineral Resources Section 3.6.6 of the EIS/LEIS has been revised to incorporate information from the recently completed BLM minerals potential report for the NAWSCL land withdrawal renewal action.

- Darwin Water Supply Sections 3.1 and 3.7 have been revised to clarify that the Darwin Community Services District has rights to access its historical water source (Coso Cold Springs), which is within the NAWSCL boundaries.

- Biological Opinion Sections 3.4 and 4.4 have been revised to incorporate stipulations of the BO issued by the USFWS to NAWSCL in February 2013 regarding the renewal of the public land withdrawal action.

- Added Chapter 10 Public Comment and Response; Chapter 11 Glossary, and Chapter 12 Index.

- Incorporated findings of recent Indian Wells Valley groundwater investigations and NAWSCL efforts to reduce water usage at the Installation.

- Incorporated updated NAWSCL wild horse and burro management strategies.

- Incorporated information regarding the USFWS preparing a Final Post-Delisting Monitoring Plan for the Inyo California towhee.

- Updated the status of NDAA signature by the President in December 2013 authorizing the land withdrawal renewal, which allows continued RDAT&E and training at NAWSCL.

- The overall conclusion for biological resources was changed from “no significant impact” at the Draft EIS/LEIS stage to 'significant impacts', in light of the uncertainties involved with potential fire-related impacts to the threatened (federally-listed) desert tortoise in conjunction with the removal of federal fire personnel from NAWSCL's South Range, thus resulting in an increase of response time in the event of future fires which could worsen such impacts. The discussion of

anticipated NAWSCL fire management strategies and overall discussion of fire-related impacts on biological resources were further developed.

- The overall conclusion for cumulative impacts for biological resources was changed to “significant” based on the revision to the finding for the Proposed Action's overall impact to biological resources.
- The cumulative impacts findings in the summary of impacts table for hydrology and water quality was changed to “significant cumulative impacts” based on the discovery during internal review of a discrepancy between the narrative discussion of hydrology/water quality cumulative impacts and the misstated conclusion in the summary table. The discussion of mitigation and Impact Avoidance and Minimization Measures for hydrology and water quality was also revised.

CHAPTER 2.0
ALTERNATIVES, INCLUDING THE PROPOSED ACTION

2.1 INTRODUCTION

This description of alternatives, including the Proposed Action, is the basis for analyzing potential environmental consequences associated with (1) the proposed Congressional renewal of the NAWSCL land withdrawal for continued military use (approved as of December 2013); (2) revision and implementation of the NAWSCL CLUMP; and (3) accommodation of an increase of up to 25 percent in the overall tempo of military RDAT&E and training activities, expansion of unmanned aerial and surface systems, and expansion of existing and introduction of evolving DE weapons development. The CDPA (P.L. 103-433) required the development of a land management plan for the withdrawn lands. The 2005 CLUMP establishes a formal corporate process for managing land use to meet current and evolving mission requirements and to maintain the DoN's responsibility for environmental compliance and stewardship of public lands. The CLUMP reflects the integration of range management strategies; the Installation's INRMP, which is required under the Sikes Act as amended in 1997 (16 U.S.C. § 670a et seq.); and other management tools such as the ICRMP.

Three alternatives are evaluated in this EIS/LEIS: the Proposed Action (Alternative 1), Baseline Alternative/Updated No Action Alternative (Alternative 2), and No Action Alternative (Alternative 3). Two of the alternatives, the Proposed Action and the Baseline Alternative/Updated No Action Alternative, would accommodate Congressional renewal of the land withdrawal for RDAT&E and training activities to meet military readiness needs.

Because NAWSCL is required by law to have a plan for the management of land areas withdrawn under the CDPA, the CLUMP is an element of the Proposed Action, Baseline Alternative/Updated No Action Alternative, and No Action Alternative, and this EIS/LEIS also serves as the NEPA-compliance document for implementing the CLUMP. The draft CLUMP update, which is provided in Appendix C of this document, reflects the management objectives related to any changes in land use projected for the Proposed Action. If the Baseline Alternative/Updated No Action Alternative is selected, the CLUMP would be revised, as appropriate, to reflect the management objectives related to land uses that accommodate current mission activities. If the No Action Alternative is selected, very limited RDAT&E and training activities at NAWSCL would continue on DoN fee-owned/leased land or within managed airspace. The CLUMP would be revised as needed to address any necessary environmental remediation of the ranges (e.g., UXO and Material Potentially Presenting an Explosive Hazard [MPPEH]) and mission activities occurring on DoN fee-owned/leased lands. The DoN would continue to manage the fee-owned/leased lands at NAWSCL in accordance with applicable legal requirements, NAWSCL management plans, and DoD and DoN guidance. The DoN would continue administrative control of the formerly withdrawn lands (no RDAT&E activities would occur) until environmental remediation and health and safety concerns are addressed to allow BLM to assume administrative control of the land.

Implementation of the CLUMP would continue to allow mission-compatible nonmilitary land uses to the extent practicable under the Installation's safety, security, fiscal, and regulatory considerations.

Standard Operating Procedure for the Environmental Review and Approval of Individual Projects

All surface-disturbing activities occurring at NAWSCL undergo environmental review as a part of the DoN's overall approval process. Projects associated with RDAT&E and facilities maintenance activities are submitted and reviewed via the most current and approved DoN Environmental Review Processes and Instructions or Plans. Proposals for off-road travel (outside of target and test sites) as part of

RDAT&E and training activities are reviewed on a case-by-case basis. Travel within target and test sites is dictated by the 2013 BO (8-8-12-F-29), 2012 ICRMP, and Ranges Road Use Direction. The result of this review, which may require cultural or natural resources surveys or other environmental requirements, may be addressed and approved either by a Programmatic Memorandum for Record, Standard Memorandum for Record, or a NEPA document (Categorical Exclusion, Environmental Assessment, or EIS). These processes are also described in the CLUMP as well as in other specific approved and updated NAWSCL policy instructions, directives, and implementation plans as revised. All NEPA, Programmatic Memorandum for Record, and Standard Memorandum for Record documentation generated is available to the public for inspection, if requested.

2.2 DEVELOPMENT OF ALTERNATIVES

Guidance for the development of alternatives is provided in CEQ regulations (40 CFR § 1502.14) and DoN procedures described in 32 CFR § 775. The analysis of alternatives is the heart of an EIS and is intended to provide the decision maker and the public with a clear understanding of relevant issues and the basis for making a choice among identified options. NEPA requires that an EIS be prepared to evaluate the environmental consequences of a range of reasonable alternatives. The alternatives in this EIS/LEIS were developed using the following considerations:

- Accommodate the needs of evolving RDAT&E and training technologies;
- Assessment of the current and projected needs for future military land use and military airspace use at NAWSCL;
- Consideration of limited nonmilitary uses that are compatible with military missions and the DoN's stewardship goals for natural and cultural resources, and that do not create a fiscal, compliance, security, or public health and safety risk; and
- Identification of public concerns through a public scoping process and consideration of comments received during this process regarding land withdrawal, land management, and environmental resources management.

2.2.1 Selection Criteria for Alternatives

Consistent with the purpose and need identified in Chapter 1, selection criteria were developed to help identify viable alternatives and eliminate unreasonable alternatives from further consideration. Selection criteria for this EIS/LEIS include the following:

- Reasonable alternatives must fulfill the need for, and purpose of, the action; and
- Alternatives must be consistent with the goals, policies, and management strategy pertaining to use of the withdrawn lands.

Alternatives that did not meet these criteria were not carried forward for further analysis in this EIS/LEIS.

2.2.2 Alternatives Considered but Not Carried Forward for Further Analysis

Ten alternatives were initially considered while preparing this EIS/LEIS. Further analysis resulted in a determination that seven of these alternatives would either not meet or would exceed the DoN's readiness needs at NAWSCL. These alternatives were subsequently eliminated from further consideration in this EIS/LEIS. A brief description of these alternatives and reasons for their elimination are provided in the following sections. The other three alternatives are carried forward in this EIS/LEIS for full environmental analysis.

2.2.2.1 Decrease Military RDAT&E and Training Alternative

This alternative would decrease military RDAT&E and training from current conditions, which would not meet the DoN's criteria to accommodate ongoing and evolving RDAT&E and training technologies. NAWSCL is one of the few U.S. military installations with state-of-the-art capabilities for the RDAT&E of weapons and weapons systems with the land ranges approved for high-hazard testing and training of military weapons systems and tactics. Although DoD's presence in specific regions of the world is decreasing, our presence in other regions is increasing. Those areas that are experiencing increases in military activity will require innovative technological advances to maintain our edge with a smaller, leaner, yet stronger fighting force. Decreasing military RDAT&E and training would not meet DoN needs for accommodating current and future forecasted levels of military RDAT&E and training readiness. Therefore, this alternative was eliminated from further consideration.

2.2.2.2 Increase Military RDAT&E and Training Beyond the Proposed Action Alternative

This alternative would increase military RDAT&E and training beyond what is included in the Proposed Action, which would exceed the current projected RDAT&E and training needs identified by the DoN. The specific levels of RDAT&E and training activities included as part of the Proposed Action are based on current knowledge of priorities for future testing and training at NAWSCL and the flexibility to handle reasonably foreseeable increases in RDAT&E and training tempo. As such, an alternative that increases RDAT&E and training beyond those described in the Proposed Action would be speculative and would go beyond what is required to meet the DoN's current and reasonably foreseeable future needs; therefore, this alternative was eliminated from further consideration.

2.2.2.3 Transfer Withdrawn Lands to Department of the Navy Alternative

This alternative would involve transferring the currently withdrawn lands at NAWSCL to the DoN rather than pursuing the land withdrawal renewal. This alternative would accommodate current and evolving DoN and DoD readiness operations. Although, as a practical matter, a renewal of the land withdrawal would meet the DoN's mission requirements, the DoN is not seeking transfer of the withdrawn lands at this time. Moreover, for purposes of NEPA analysis, environmental impacts associated with such a potential transfer would largely be indistinguishable from those anticipated with respect to either the Proposed Action or Baseline Alternative/Updated No Action Alternative as discussed herein. Therefore, this alternative was eliminated from further consideration.

2.2.2.4 Expand NAWSCL Range Footprint to Accommodate RDAT&E and Training Alternative

This alternative would involve expanding the land area currently withdrawn from BLM to support RDAT&E and training requirements. This alternative would accommodate current and evolving DoN and DoD readiness. The DoN continuously reviews RDAT&E requirements to determine if additional land is required in the future; however, based on projected RDAT&E and training requirements, additional land is not anticipated to be required, and, accordingly, this alternative would exceed the DoN's actual needs. Should the DoN determine a need for additional land in the future, appropriate location, size, and other data could be developed for future NEPA documentation. Such details are currently speculative. Therefore, this alternative was eliminated from further consideration.

2.2.2.5 Develop New Range to Accommodate RDAT&E and Training Alternative

This alternative would involve the DoN acquiring a large, vacant land area to establish a new range to accommodate ongoing and evolving RDAT&E and training requirements. Based on current hazard footprints of RDAT&E activities at NAWSCL, the land area of the new range would be required to be

approximately 1.1 million acres (445,156 hectares) to contain the potential hazards from RDAT&E events. This alternative would accommodate current and evolving DoN and DoD readiness. However, based on the overwhelming requirements and regulations of siting and acquiring such a large parcel of land, which may not be in California; the prohibitive cost of acquiring the land, establishing RDAT&E infrastructure, and conducting RDAT&E activities on this land; and the need for prior coordination with the DoI or other federal agencies and overall approval from Congress, this alternative was eliminated from further consideration.

2.2.2.6 Transfer of Ownership of Coso Hot Springs and Prayer Site to Native American Tribes or Land Trust, with Establishment of Permanent Right-of-Way for Native American Tribal Access and Use

This alternative would transfer the ownership of DoN fee-owned lands to Native American tribal interests and establish a route of entry to the Coso Hot Springs and Prayer Site that would be free of DoN oversight and control. Notwithstanding that it would not itself have authority to execute such a transfer, the DoN has determined that mission requirements for effective land use controls to ensure safety and security requirements preclude this from being a viable proposal. Such an action would not meet the DoN's purpose and need as it would allow for unregulated entry onto an active military test range and place land use decision authority for lands within the test range with a non-Navy entity. Tribal access to the Coso Hot Springs and Prayer Site continues to be accommodated under the terms of a 1979 MOA between the DoN and the Coso Ad Hoc Committee representing the Owens Valley Paiute-Shoshone Band of Indians. It should also be noted that a potential transfer of the Coso Hot Springs and Prayer Site is very speculative. The DoN does not view the property in question as being excess to its current or anticipated needs, nor would the DoN have authority to effect such a transfer itself even if it did consider the property excess. Therefore, this alternative was eliminated from further consideration.

2.2.2.7 Minerals Development Alternative

This alternative would allow development of valuable mineral deposits identified within the boundaries of NAWSCL. Although an area within the North Range that is considered a valuable geothermal resource is currently active with four producing geothermal steam power plants, this activity is conducted in accordance with current statutory authorities that allow development of geothermal resources within NAWSCL. Notwithstanding whether or to what extent exploration and/or development of mineral resources could potentially take place at NAWSCL subsequent to the now-accomplished renewal of the land withdrawal for the Installation, the DoN has determined that mission requirements for effective land use controls to ensure safety and security requirements preclude this from being a viable proposal. Therefore, this alternative was eliminated from further consideration.

2.3 ALTERNATIVES

The criteria described in Section 2.2.1 were used to develop the three alternatives analyzed in this EIS/LEIS. The Proposed Action (Alternative 1) includes (1) Congressional renewal of the land withdrawal (25-year renewal); (2) revision and implementation of the CLUMP; and (3) accommodation of an increase (up to 25 percent increase) in RDAT&E and training activities, expansion of unmanned aerial and surface systems, and expansion of existing and introduction of evolving DE weapons development.

The Baseline Alternative/Updated No Action Alternative (Alternative 2) would result in (1) Congressional renewal of the land withdrawal (25-year renewal), (2) revision and implementation of the CLUMP, and (3) continuation of RDAT&E and training activities at current levels. Under the No Action Alternative (Alternative 3), the land withdrawal would have expired, with administrative control remaining with the DoN until environmental remediation and health and safety concerns were addressed to allow the return

of formerly withdrawn land to BLM. However, the FY 2014 NDAA was signed into law by the President on December 26, 2013 authorizing the land withdrawal renewal. An expiration of the public land withdrawal would have terminated the DoN's authority to use approximately 92 percent of the NAWSCL lands. The DoN would have continued to be responsible for the remaining fee-owned/leased land (8 percent of the NAWSCL lands) and managed airspace. However, the remaining fee-owned/leased land would have been insufficient to accommodate the hazard patterns, targets, maneuvering areas, special equipment, explosive areas, and other features associated with RDAT&E and training events, likely resulting in a dramatic reduction in, or potentially even the eventual cessation of, RDAT&E at NAWSCL.

Had the No Action Alternative been chosen, a management plan would have no longer been mandated by NAWSCL pursuant to the CDPA; however, it is anticipated that the CLUMP would have been retained as the land use management plan for ongoing DoN/DoD activities that would be accommodated at NAWSCL. The CLUMP would have been revised as needed to address any necessary environmental remediation of the ranges (e.g., UXO and MPPEH) and mission activities on DoN fee-owned/leased lands. However, with the President signing the FY 2014 NDAA into law on December 26, 2013, the public land withdrawal at NAWSCL was reauthorized until 2039. Because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of "no action" conditions at NAWSCL. Therefore, for the purposes of the Final EIS/LEIS, the Baseline Alternative/Updated No Action Alternative is considered to effectively represent "no action" conditions or status quo. This alternative is defined as the continuation of military RDAT&E and training activities at NAWSCL at current levels. The discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed.

Table 2-2 at the end of this chapter compares the specific RDAT&E and training elements of each alternative. Activities associated with each alternative are described in more detail in Sections 2.3.1, 2.3.2, and 2.3.3.

2.3.1 Proposed Action (Alternative 1)

The Proposed Action (Alternative 1) is the DoN's preferred alternative and would provide NAWSCL the greatest flexibility to accommodate current and evolving DoN and DoD readiness RDAT&E activities. This alternative was designed to be flexible enough to handle reasonably foreseeable increases in RDAT&E and training tempo. It includes Congressional renewal of the land withdrawal (25-year renewal), allows for the increase of RDAT&E and training tempo (up to 25 percent) within current land use areas approved for designated uses, expands unmanned aerial and surface systems, and provides expansion of existing and introduction of evolving DE weapons development. As previously mentioned, NAWCWD, a tenant at NAWSCL, conducted an analysis of current and projected activities that are expected to be needed to meet current and evolving RDAT&E and training mission requirements. As a result of this analysis, NAWCWD developed projections for the land use patterns and intensity (type, tempo, and location) needed to accommodate the expected RDAT&E and training events as documented in Appendix B. The specific RDAT&E and training proposals evaluated in this EIS/LEIS are based on NAWCWD's current knowledge of priorities for future RDAT&E and training events, and to accommodate more RDAT&E and training on NAWSCL. These projections were based on contemporary operational trends and user feedback regarding expectations for future work to be conducted at NAWSCL.

Nonmilitary activities would continue according to current patterns of use. Land use changes that may be proposed and potentially approved in the future would be accommodated in accordance with the CLUMP and applicable NAWSCL approval processes. Natural and cultural resources would continue to be conserved with implementation of the CLUMP management process. Key components of the Proposed Action are described in the following sections.

2.3.1.1 Land Withdrawal

The Proposed Action would continue the existing withdrawal of 1,044,126 acres (422,544 hectares) of public land in Kern, Inyo, and San Bernardino counties for military use for a 25-year term. The land withdrawal extension allows the DoN to continue defense-related RDAT&E and training and other land uses at NAWSCL.

2.3.1.2 RDAT&E Training Events

RDAT&E and training events at NAWSCL generally fall into one of seven major mission areas: (1) air-to-air, (2) surface-to-air, (3) air-to-ground, (4) surface-to-surface, (5) energetics/munitions, (6) electromagnetics (including DE), and (7) track test. Additional Fleet and DoD training operations supported include air combat, aircrew, combat skills, and ground troop training (GTT). A typical description of each mission area and the range use areas that may be required to support them are provided in the summary strips below, supplemented by scenario Figures 2-1 through 2-11.

The types and tempo of RDAT&E and training events at NAWSCL have fluctuated since its establishment as the DoN's munitions T&E facility in 1943. These fluctuations have been due to changing world situations, the introduction of advances in war-fighting doctrine and technology (most recently focusing on longer range and highly accurate standoff weapons, including guided missiles), phased development of weapons acquisition programs, and the DoD T&E budget. Most of the factors influencing tempo and types of RDAT&E and training are fluid and will continue to cause fluctuations in NAWSCL activity levels.

To address this issue, NAWCWD conducted an analysis of current and projected activities that are expected to be needed to meet current and evolving RDAT&E and training mission requirements. As a result of this analysis, projections for the land use patterns and intensity (type, tempo, and location) were developed. The specific RDAT&E and training proposals evaluated in this EIS/LEIS are based on NAWCWD's current knowledge of priorities for future RDAT&E and training events, and to accommodate more RDAT&E and training on NAWSCL. These projections were based on contemporary operational trends and user feedback regarding expectations for future work to be conducted at NAWSCL.

Anticipated changes to military activities under the Proposed Action include an increase of up to 25 percent in the type and tempo of ongoing military RDAT&E and training events and associated support activities. Figures 2-12 and 2-13 show the military land uses related to the Proposed Action for the North Range and South Range, respectively. The Proposed Action also includes an expansion of unmanned aerial and surface systems and expansion of existing and introduction of evolving DE weapons development, and the introduction of moving targets in the Northwest Target Complex of Superior Valley.

Mission Area	Typical Scenario Description	Range Use Areas (Appendix B)
Air-to-Air	A typical air-to-air scenario, depicted in Figure 2-1, involves the test of an air-launched, air-intercept weapon against a variety of aerial targets. Air-to-air events generally employ manned and/or unmanned aircraft, a kinetic or DE weapon system, a target, and countermeasure devices such as flares or chaff. Air-to-air testing assesses and evaluates weapons and weapon systems and the integration of weapon systems with the aircraft. Activities may include inert, live motor but no warhead, or live round for firing and warhead detonation. Examples of this scenario are the launch of an AIM-9X Sidewinder missile against a full-scale aerial target or the deployment of a high-energy laser (HEL) weapon from a manned platform against an unmanned aerial target.	Engagement Areas North and South Ranges and the Trona Corridor and Controlled Firing Area Associated Scattered Debris Areas Portions of Coso North and South, Cactus Flats, Coles Flat, Darwin Wash, Junction Ranch, Coso Geothermal, Baker, Airport Lake, Charlie, SNORT, George, Mojave B North, Randsburg Wash, and Superior Valley

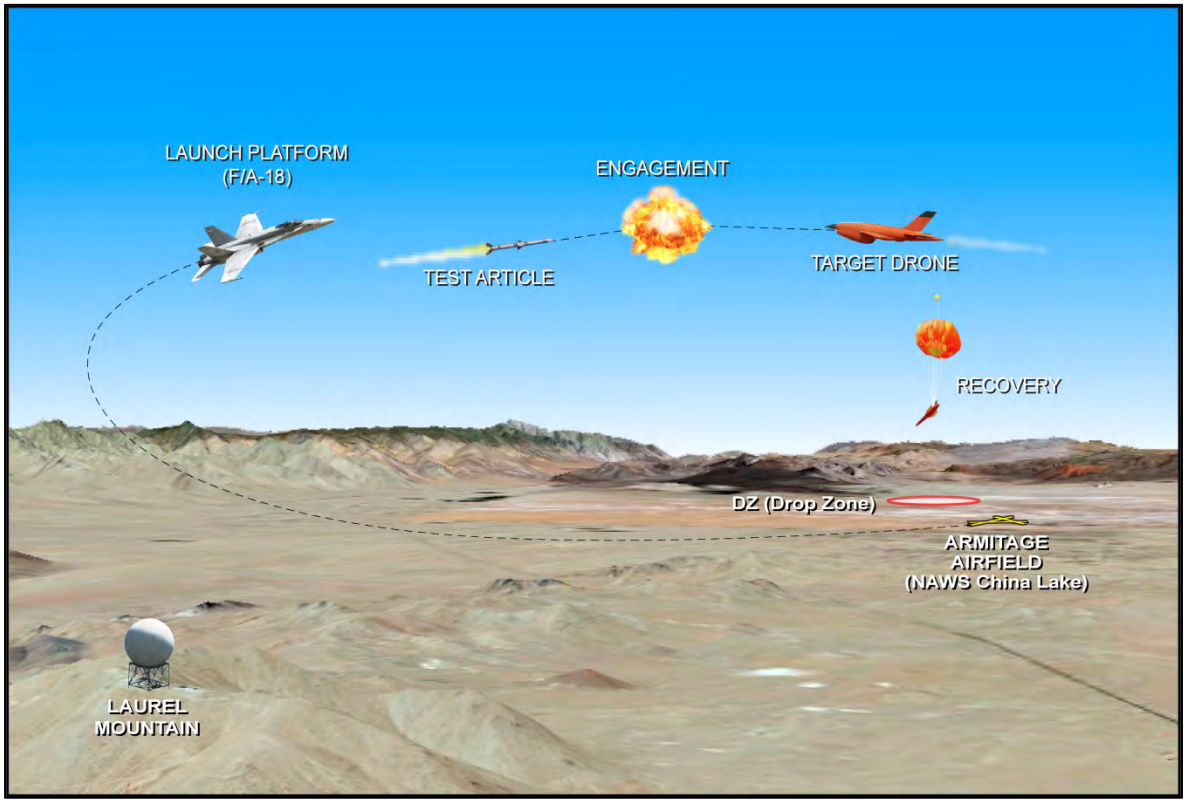


Figure 2-1 Typical Air-to-Air Scenario

Mission Area	Typical Scenario Description	Range Use Areas (Appendix B)
Surface-to-Air	Typical surface-to-air events, depicted in Figure 2-2, have the same hazard patterns as air-to-air events. Testing may also include the use of countermeasure devices such as flares and chaff. This scenario involves the test of a surface-launched kinetic or DE weapon against a variety of aerial targets. Surface-to-air testing evaluates overall weapon system performance, warhead effectiveness, and software/hardware modifications or upgrades of ground-based weapons systems. Activities may include inert warheads or live rounds for firing and warhead detonation. Targets used in surface-to-air testing include full-scale surface-launched targets, air- or surface-launched subscale targets, unmanned systems, or helicopter targets. This scenario includes the test of a ground-launch weapon from a fixed launcher. Examples of this scenario are the launch of a 2.75 HYDRA-70 rocket from a stationary launch rail, a phalanx gun systems test, or the deployment of a HEL weapon against an airborne target.	Engagement Areas North and South Ranges and the Trona Corridor and Controlled Firing Area Associated Scattered Debris Areas Portions of Coso North and South, Cactus Flats, Coles Flat, Darwin Wash, Junction Ranch, Coso Geothermal, Baker, Airport Lake, Charlie, SNORT, George, Mojave B North, Randsburg Wash, and Superior Valley

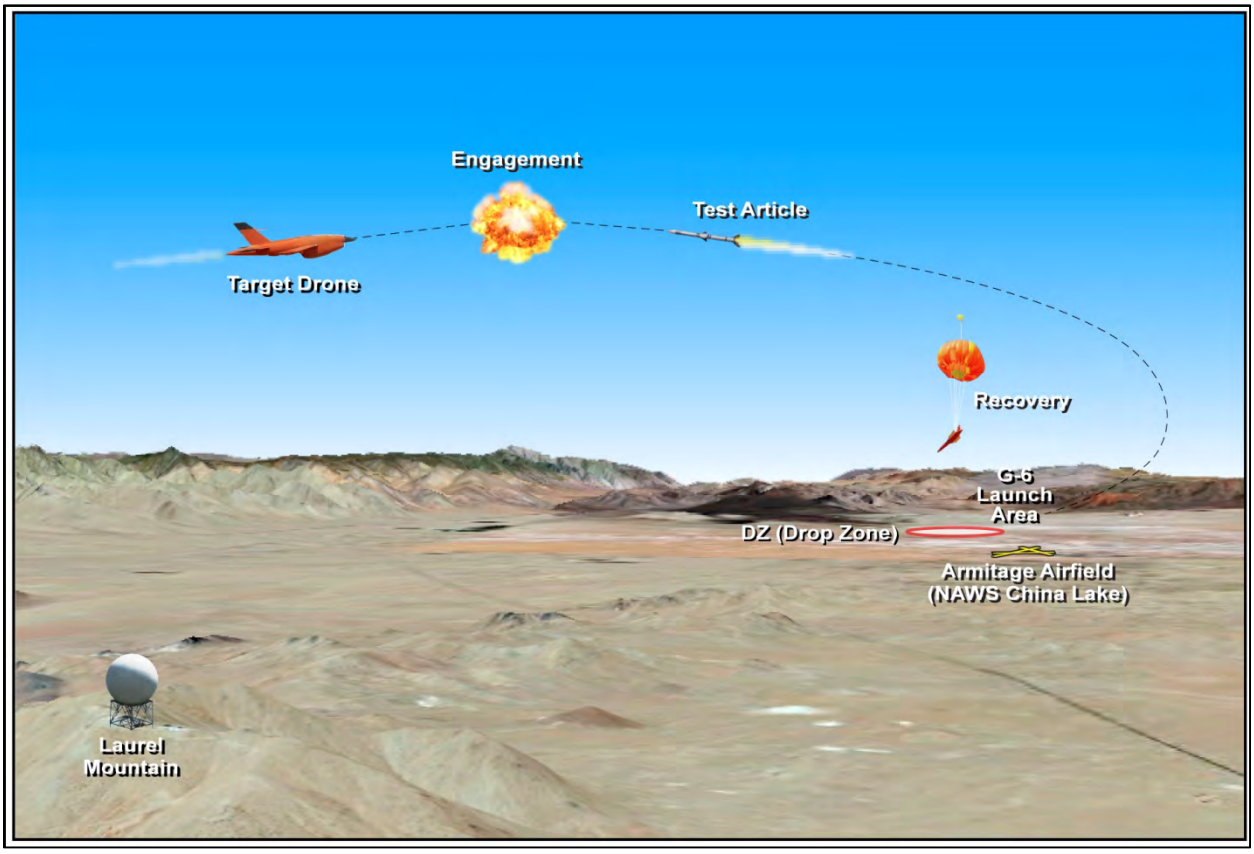


Figure 2-2 Typical Surface-to-Air Scenario

Mission Area	Typical Scenario Description	Range Use Areas (Appendix B)
Air-to-Ground	This scenario, depicted in Figure 2-3, involves the test of an air-launched, ground attack, kinetic or DE weapon against a variety of ground-based targets. Air-to-ground testing assesses and evaluates weapon systems, the integration of air-to-ground weapons or weapon systems to the aircraft, warhead effectiveness, and weapon systems and/or aircraft software and hardware modifications or upgrades. Air-to-ground tests are heavily dependent on ground targets, which can include a wide variety of both vehicular and structural targets. Activities may include inert, live motor but no warhead, or live round for firing and warhead detonation. Examples of this scenario are the launch of a GBU-130 Joint Direct Attack Munition (JDAM) against a fixed, structural target or the deployment of a high-power microwave (HPM) weapon against an electronic target.	<u>Engagement Areas</u> North and South Ranges and the Trona Corridor and Controlled Firing Area <u>Target/Test Areas</u> Designated target and test areas throughout North and South Ranges

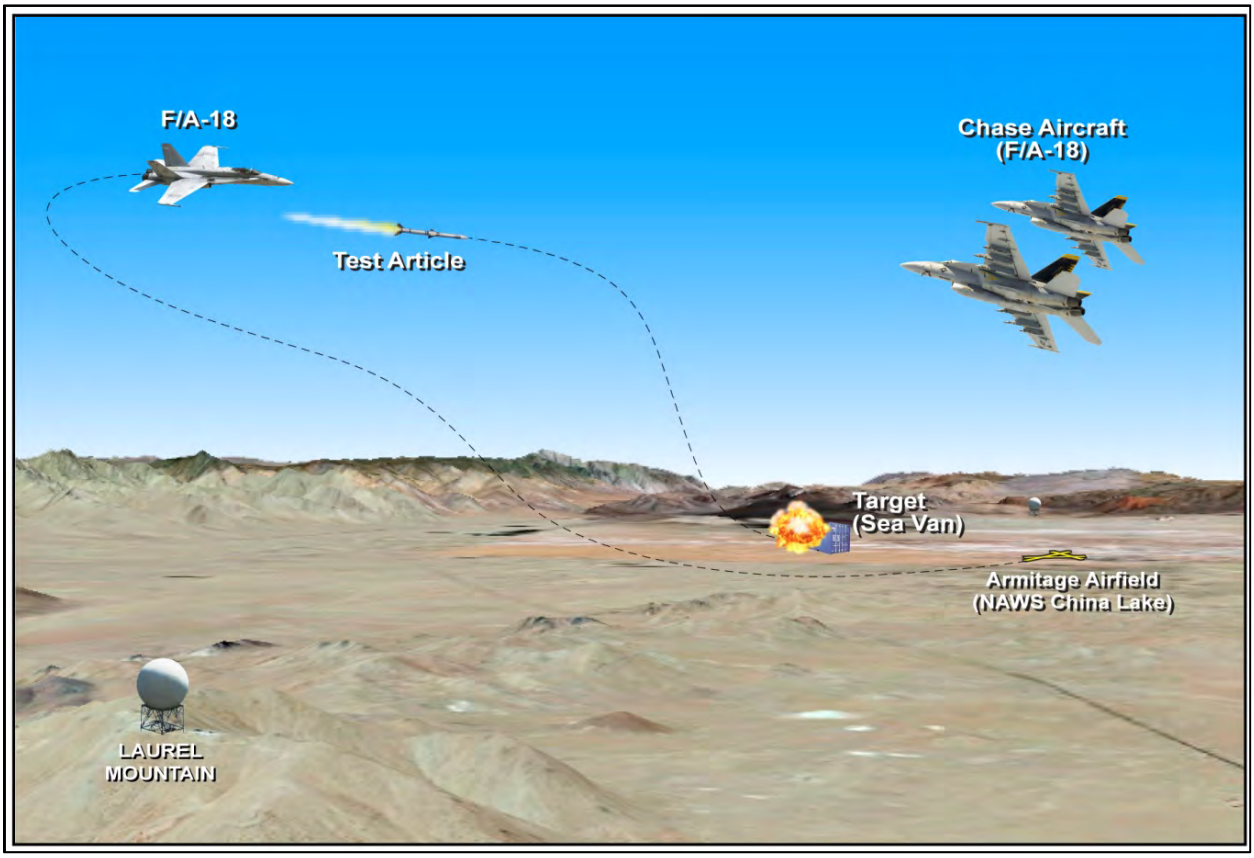


Figure 2-3 Typical Air-to-Ground Scenario

Mission Area	Typical Scenario Description	Range Use Areas (Appendix B)
Surface-to-Surface	This scenario, depicted in Figure 2-4, involves the test of a surface-launched, kinetic or DE weapon against a surface target. Surface-to-surface testing evaluates the overall weapon system performance, warhead effectiveness, and software/hardware modifications or upgrades of ground-based weapons systems. Activities may include inert warheads or live rounds for firing and warhead detonation. Targets used in surface-to-surface testing include both fixed and mobile. This scenario includes the testing of naval guns and other types of smaller-caliber guns from fixed surface sites, ground vehicles, and air platforms. Examples of this scenario are the 5/54 naval guns, ground-based DE systems, and shoulder-fired weapons.	<u>Engagement Areas</u> Portions of Coso North and South, Coles Flat, Coso Geothermal, Airport Lake, Baker, Charlie, SNORT, George, Munitions T&E, Main Magazines, Propulsion Laboratories, Mojave B North, Randsburg Wash, and the Trona Corridor and Controlled Firing Area <u>Target/Test Areas</u> Designated target and test areas throughout North and South Ranges

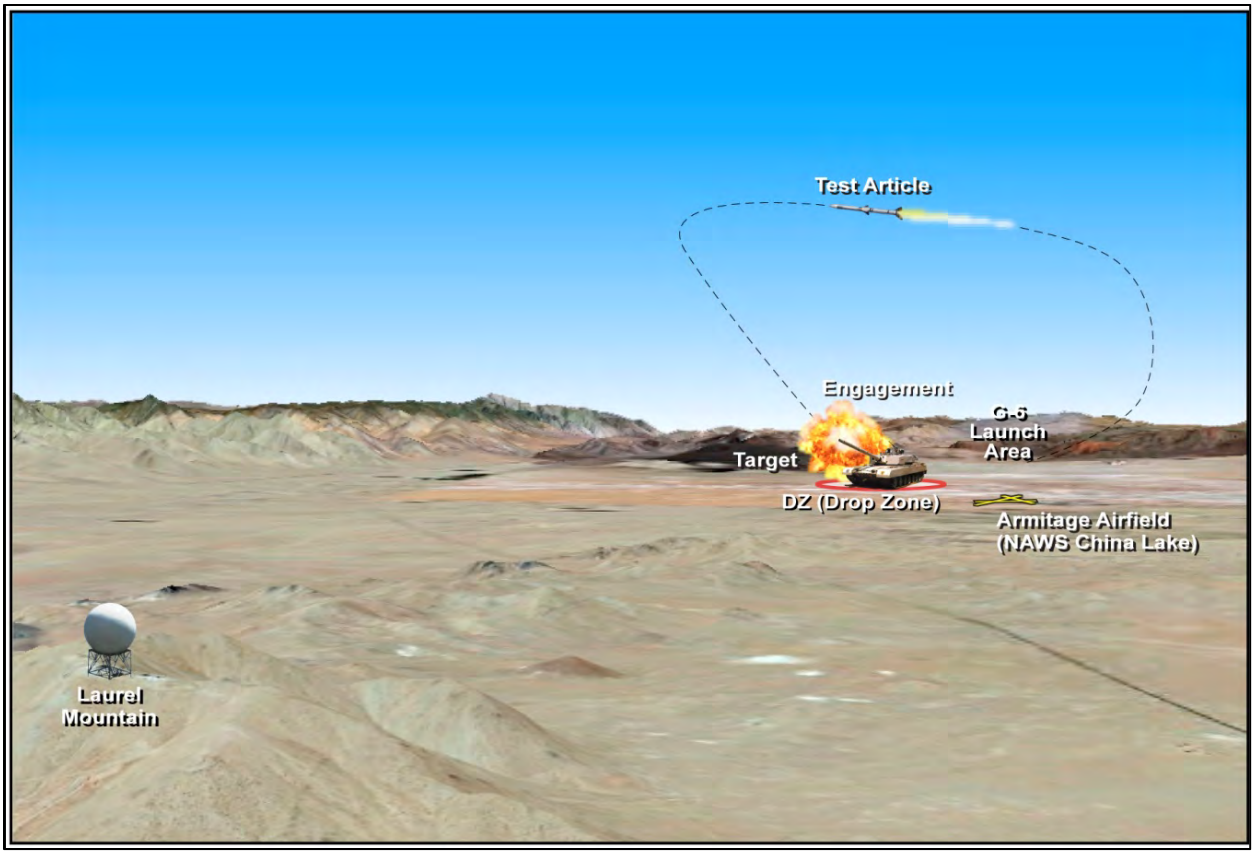


Figure 2-4 Typical Surface-to-Surface Scenario

Mission Area	Typical Scenario Description	Range Use Areas (Appendix B)
Energetics/ Munitions	This scenario includes test, training, and disposal activities related to the use of energetic materials such as propellants and explosives. Much of the work conducted by the Energetics Research Division on explosives, propellants, and pyrotechnics is included in this category. In addition, the development and test of counter improvised explosive device (CIED) detection and neutralization systems may be considered energetics testing. Examples include: • Propulsion testing of solid fuel rocket motors ranging from small laboratory scale to large strategic systems up to 1.5 million pounds of thrust, aero-heating testing of materials and small ram jet engines, and characterization of combustion products and plume measurements of rocket motors. • Environmental and safety testing for live rounds in accordance with Military Standard (MIL-STD)-810G, *Environmental Test Methods and Engineering Guidelines*, or MIL-STD-2105D, *Department of Defense Test Method Standard: Hazard Assessment Tests for Non-Nuclear Munitions,* requirements. Environmental life cycle tests include vibration, temperature, humidity, x-ray, and munitions firing. Safety tests include fast and slow cook-off, bullet and fragment impact, drop tower, and detonation. Test articles are generally live rounds undergoing either munitions testing to ensure safe deployment at sea, or qualification testing for operational deployment. All weapons systems are required to undergo this type of testing. • Treatment of energetic hazardous waste generated from R&D laboratory activities, as well as munitions waste (both nonstandard items that are no longer useful to RDAT&E purposes and standard items that are expired, in excess, or unsafe). Activities are performed at a permitted facility in Burro Canyon. The facility allows for the treatment of sizeable quantities of energetic wastes that cannot be safely transported off range and must be treated on-site. • Manned/unmanned systems testing against buried threats. • Blow-in-place activities to dispose of unexploded munitions or support range activities. • Warhead testing to measure the effectiveness of operational and development weapons, fuel-air testing, gun testing, and a large variety of specialized R&D activities. Test scenarios range from small explosive tests to large arena tests to characterize fragment distribution and velocity, shock and pressure waves, shaped charge performance, and overall warhead effectiveness.	<u>Engagement Areas</u> Coso South, Coles Flat, Darwin Wash, Junction Ranch, Baker, Airport Lake, Charlie, SNORT, George, Armitage Field, Mainsite, Propulsion Laboratories, Main Magazines, Munitions T&E, Mojave B North, and Ransburg Wash <u>Target/Test Areas</u> Designated target and test areas in Coso South, Coles Flat, Darwin Wash, Junction Ranch, Baker, Airport Lake, Charlie, SNORT, George, Propulsion Laboratories, Munitions T&E, Mojave B North, and Randsburg Wash (see Appendix B)

Mission Area	Typical Scenario Description	Range Use Areas (Appendix B)
Electromagnetics (including DE)	This scenario involves ground and flight tests that radiate radio frequency (RF) energy across much of the electromagnetic spectrum. These events may involve the release of electronic warfare (EW) defensive countermeasure devices such as chaff, flares, and decoys. Electromagnetic (EM) events include antenna pattern and radar cross-section (RCS) measurements; defensive and offensive EW systems; laser systems for targeting, weapons, communication, mapping, etc.; DE weapons; experimental electromagnetics; communications; EM vulnerability of electronic systems; and other RF-related testing. This category may also include the development and test of CIED detection and neutralization systems. DE weapons development and test are an important component of electromagnetics. HEL and HPM open-air test events may include: • Component level test to evaluate functionality and efficiency. • Beam characterization to measure fluence, attenuation, divergence, and other propagation effects under various atmospheric conditions. • Subscale systems to evaluate component compatibility. • System integration into air and surface platforms. • Test to evaluate laser and HPM beam interaction with targets. • Full-up system test to evaluate acquisition, and tracking performance. • Full-up systems test to defeat air and/or ground targets with DE weapons mounted in air and/or ground vehicles. Figures 2-5 through 2-9 depict typical HEL and HPM scenarios at NAWSCL.	Engagement Areas North and South Ranges Focused Electromagnetic Areas Portions of Coso North and South, Cactus Flats, Coles Flat, Darwin Wash, Junction Ranch, Baker, Airport Lake, Charlie, SNORT, George, Armitage Field, Propulsion Laboratories, Munitions T&E, Mojave B North, and Randsburg Wash

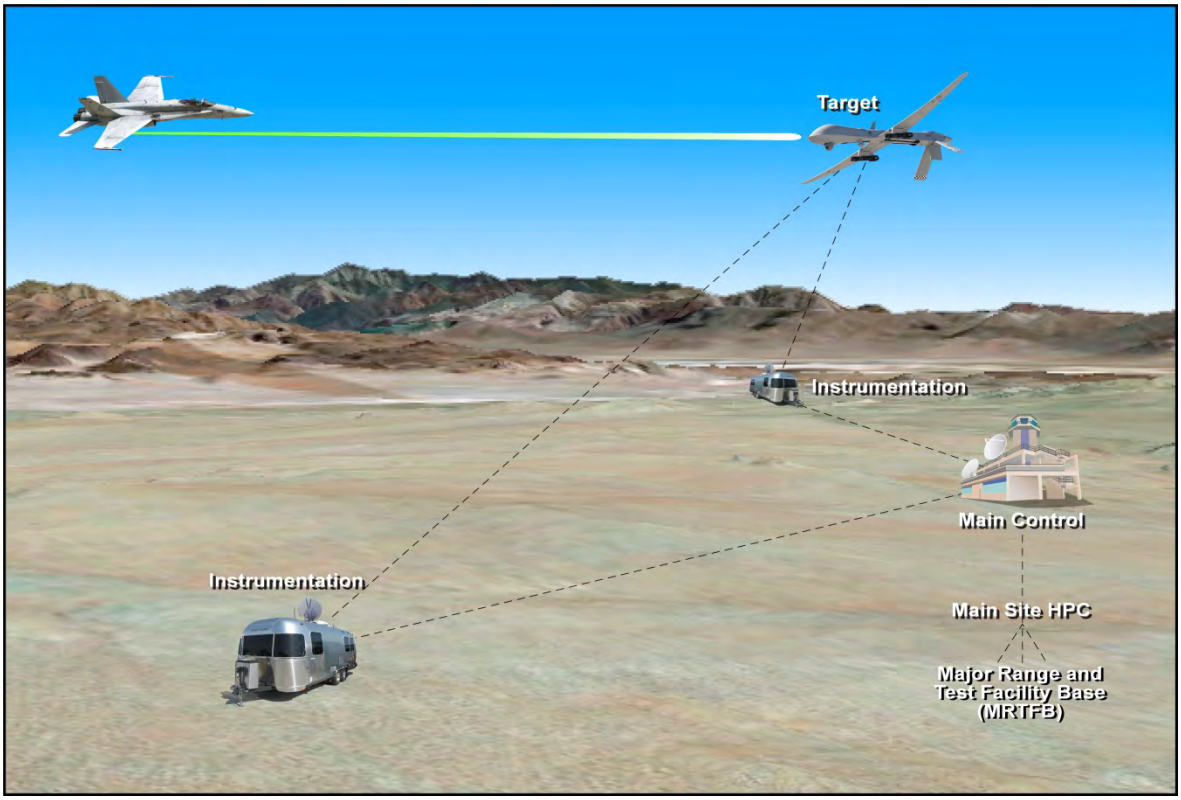


Figure 2-5 Typical Air-to-Air HEL Scenario

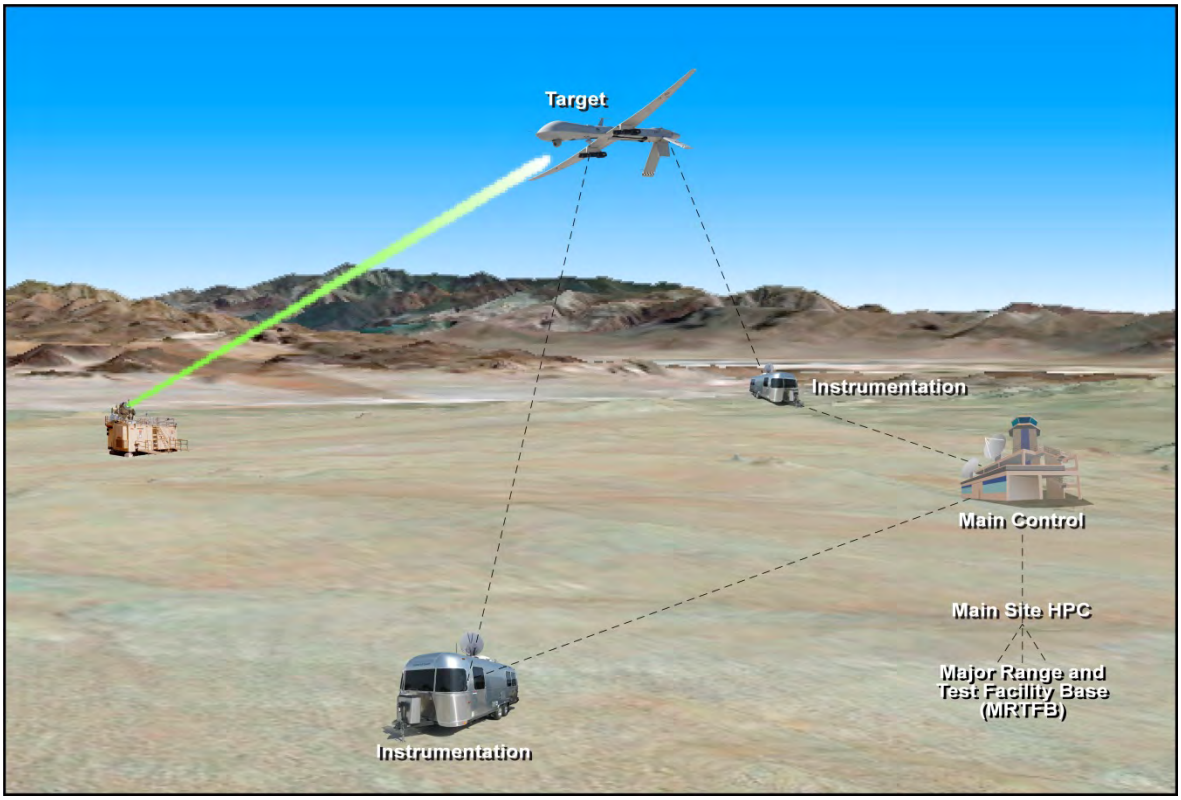


Figure 2-6 Typical Surface-to-Air HEL Scenario

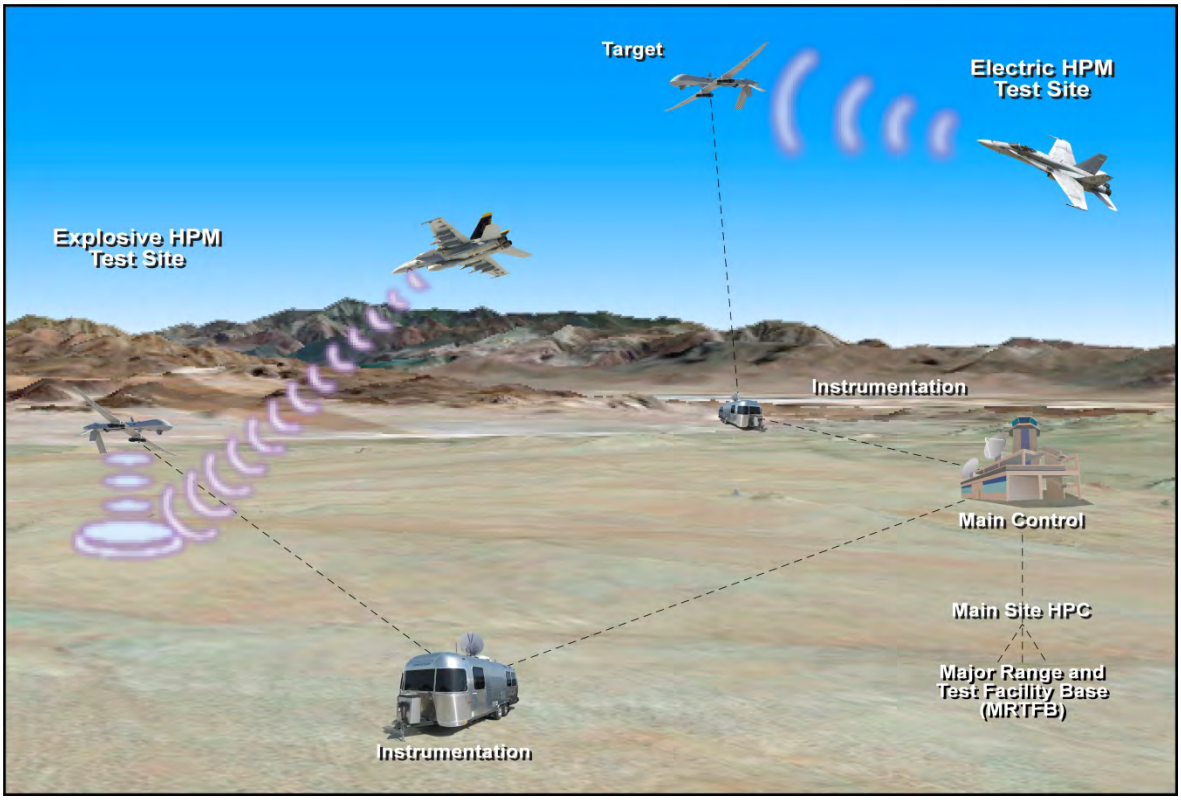


Figure 2-7 Typical Air-to-Air HPM Scenario

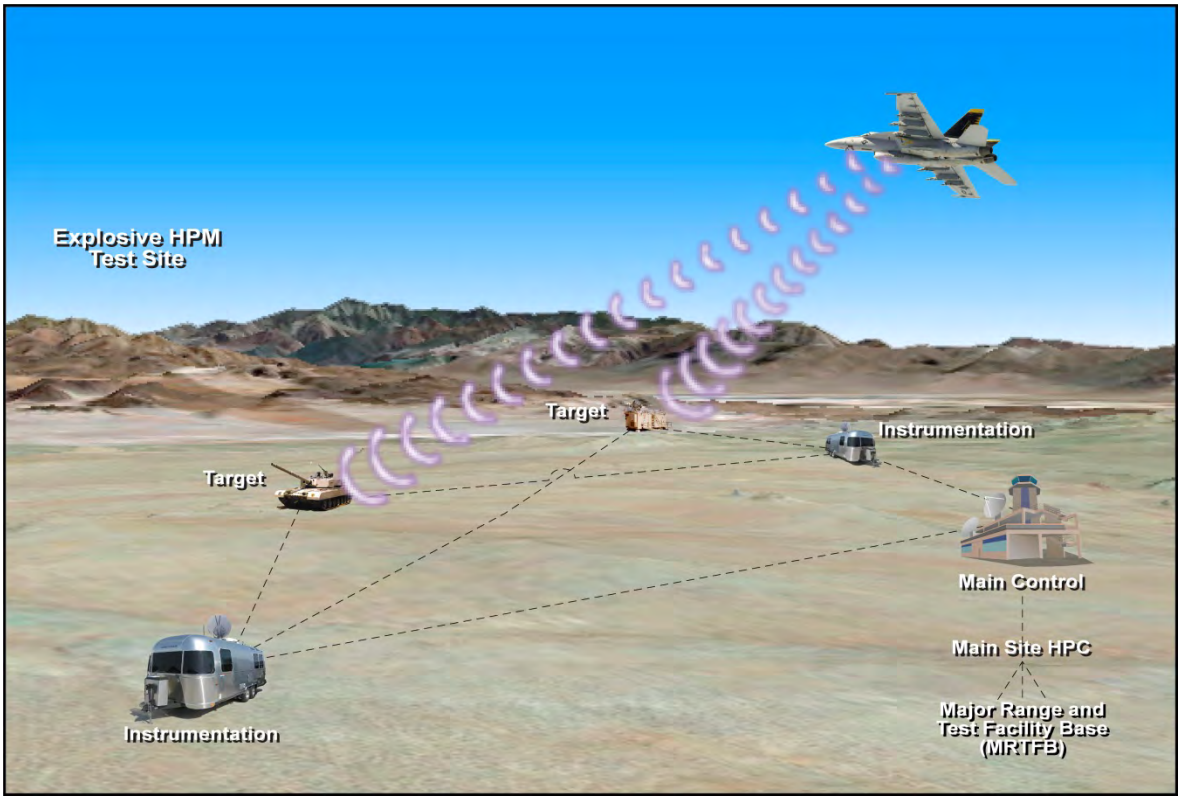


Figure 2-8 Typical Air-to-Surface HPM Scenario

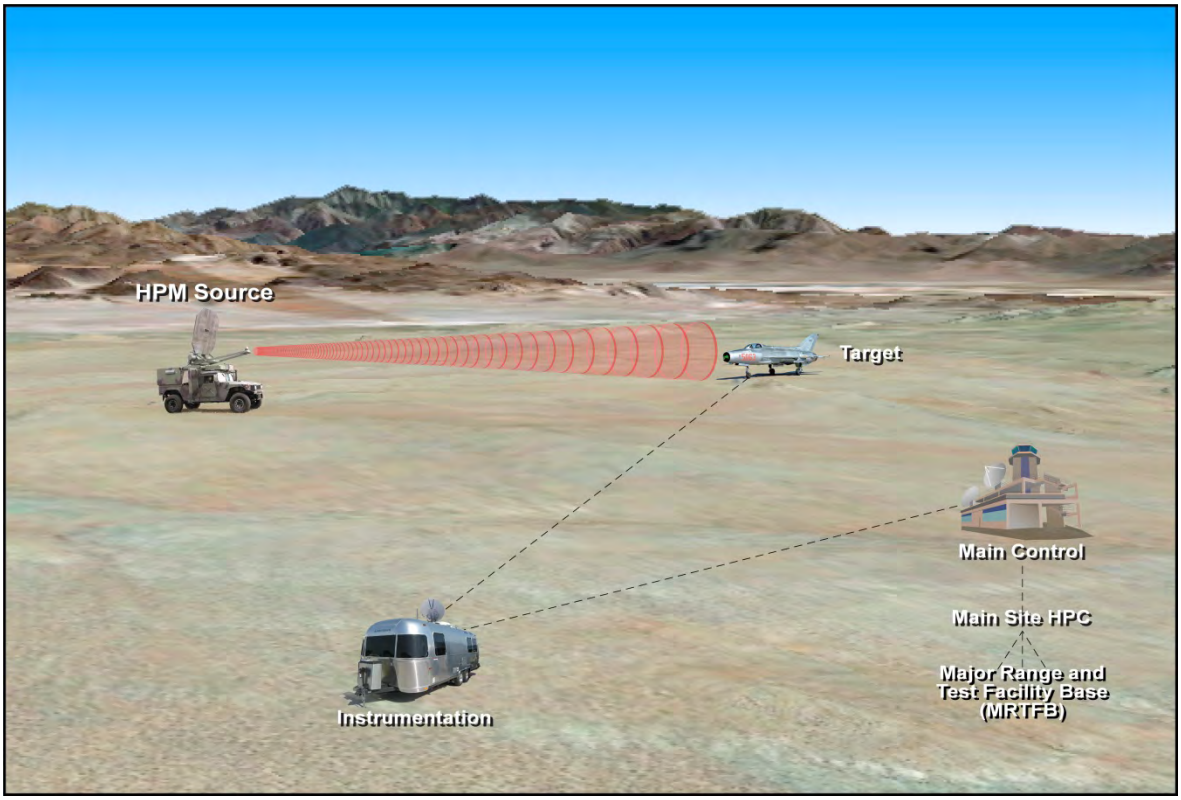


Figure 2-9 Typical Surface-to-Surface HPM Scenario

Mission Area	Typical Scenario Description	Range Use Areas (Appendix B)
Track Test	This scenario involves the test of a kinetic or DE weapon system mounted on a sled capable of speeds ranging from subsonic to hypersonic. A test article, often a full-scale aircraft or weapon system, is propelled down the track to simulate flight conditions. Typical test track events include target penetration using live high explosive (HE) warheads, live fuses, aircrew ejection systems, bombs, missiles, rockets, free flight terminal ballistics, soft recovery, EW and countermeasures, and vehicle and barrier testing. An example of this scenario is the test of a weapon system for target penetration capabilities against a fixed target, often a concrete block, mounted down-range of the muzzle section of the track. The weapon is separated from a propelled sled, which is retarded via water brake prior to the muzzle, and allowed to transit down-range to impact. Figures 2-10 and 2-11 illustrate test track event scenarios.	Engagement Areas Portions of Baker, SNORT, Charlie, and Airport Lake Target/Test Areas Designated target and test areas in SNORT, Charlie, and Airport Lake

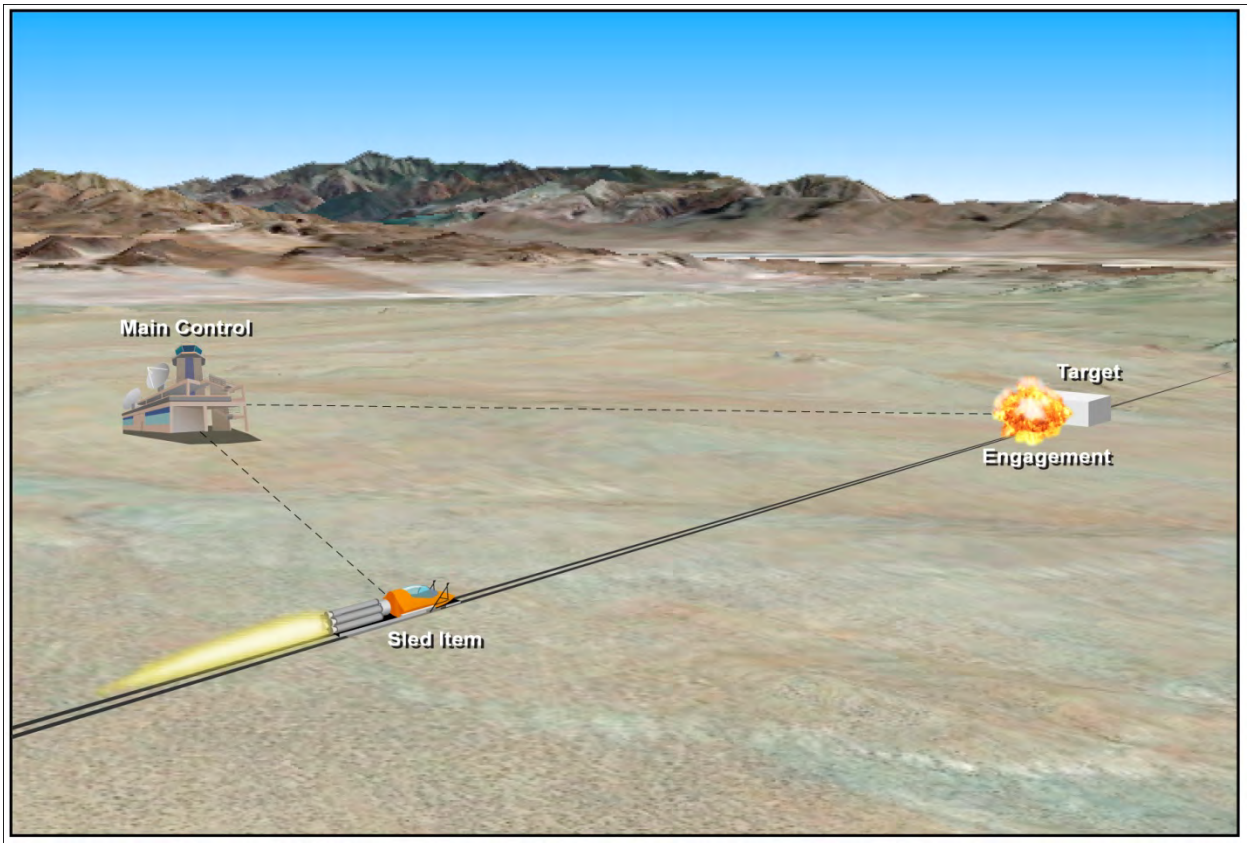


Figure 2-10 Typical Target Penetration Scenario

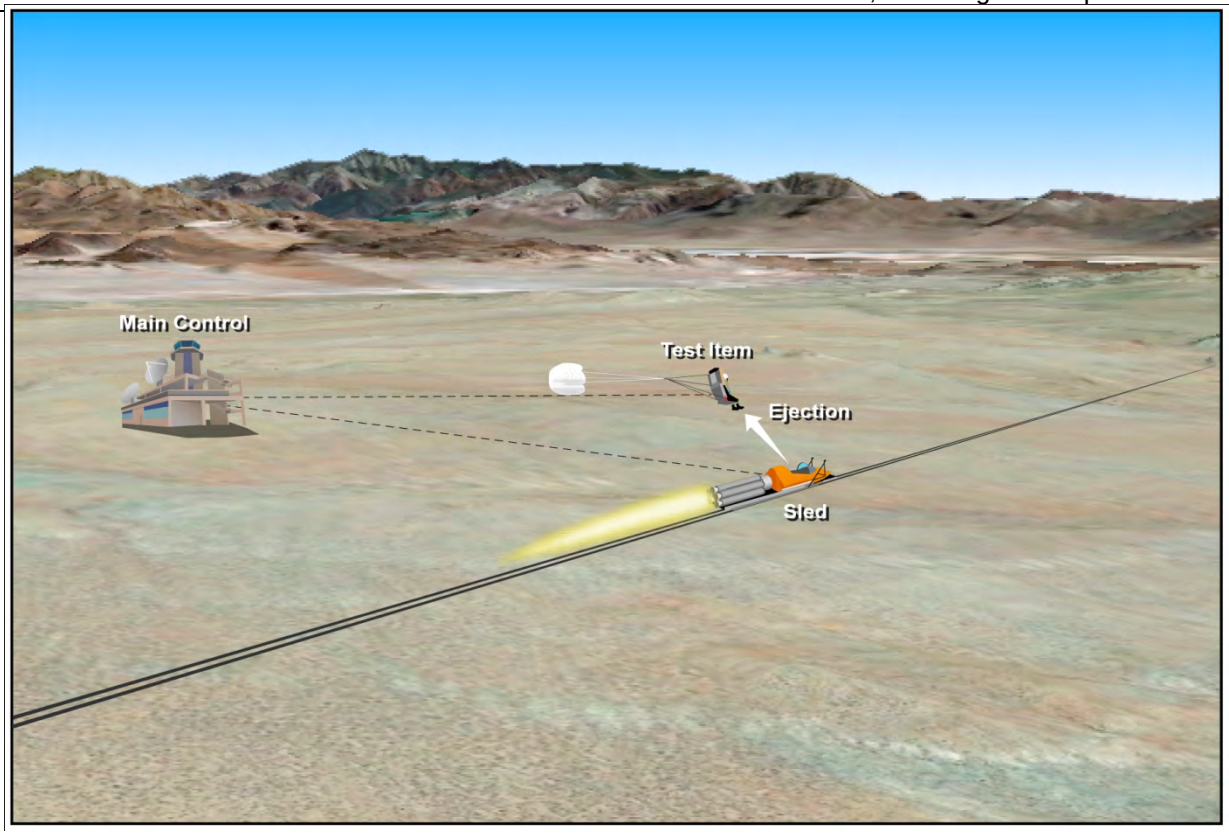
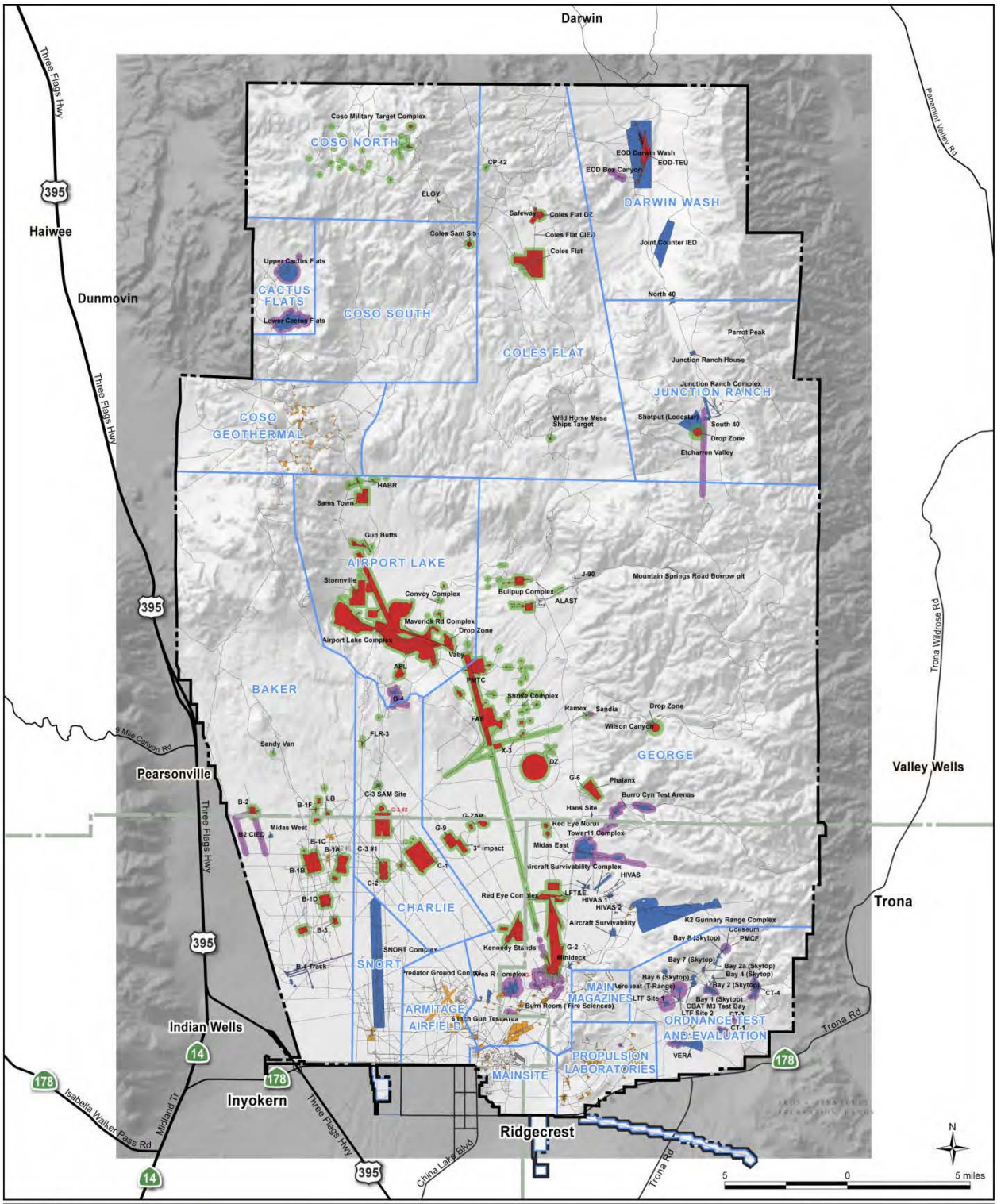
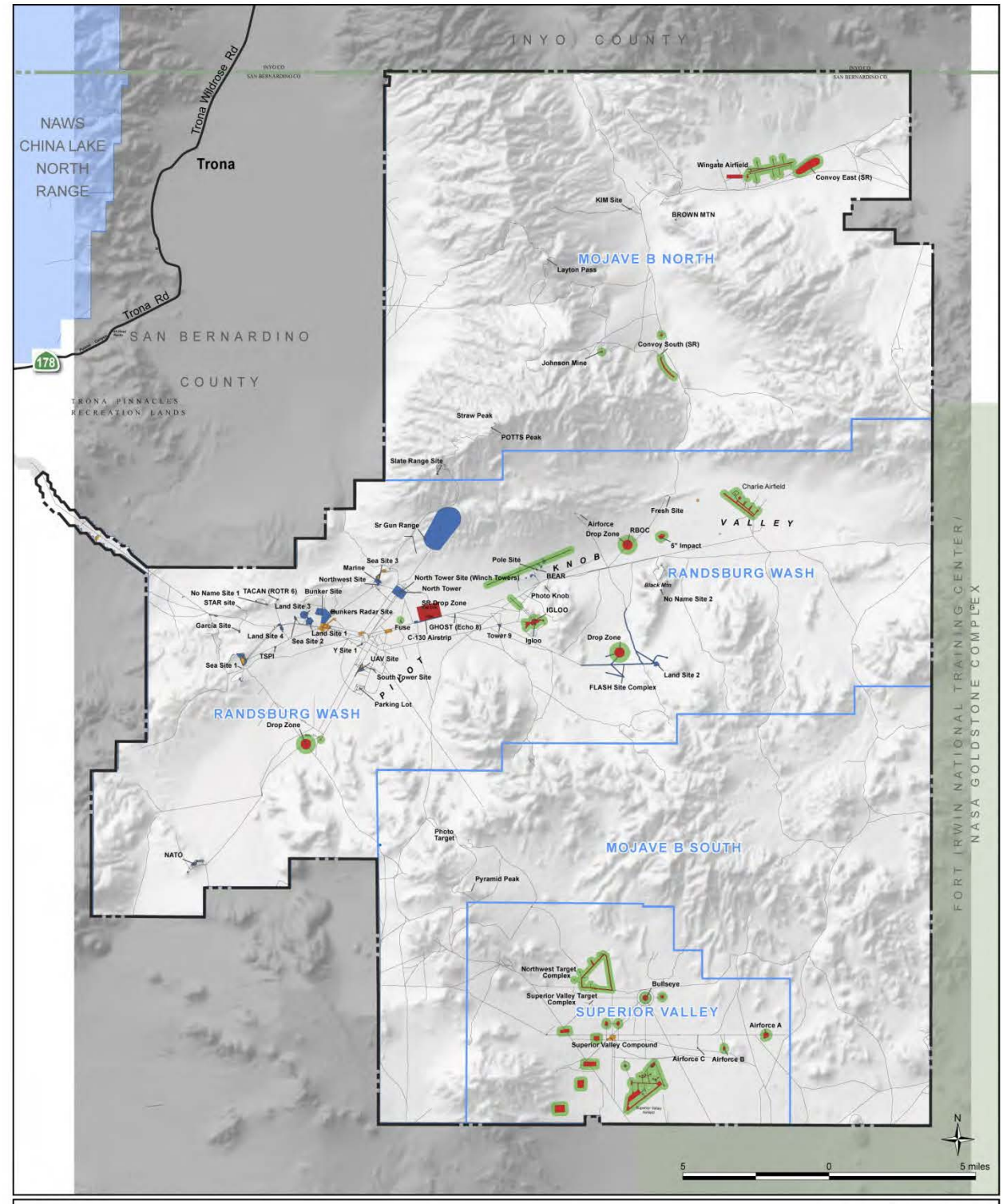


Figure 2-11 Typical Ejection Systems Scenario


Darwin
Three Flags Hwy
Panamint Valley Rd
395
Haiwee
Dunmovin
Three Flags Hwy
COSO NORTH
Coso Military Target Complex
CP-42
ELOY
EOD Darwin Wash
EOD-TEU
EOD Box Canyon
DARWIN WASH
Safeway
Coles Flat DZ
Coles Flat CIED
Coles Flat
Joint Counter IED
Coles Sam Site
Upper Cactus Flats
CACTUS FLATS
Lower Cactus Flats
COSO SOUTH
North 40
Parrot Peak
COLES FLAT
Junction Ranch House
Junction Ranch Complex
JUNCTION RANCH
Shotput (Lodestar)
South 40
Drop Zone
Etcharren Valley
Wild Horse Mesa Ships Target
COSO GEOTHERMAL
HABR
Sams Town
Gun Butts
AIRPORT LAKE
Stormville
Convoy Complex
Maverick Rd Complex
Airport Lake Complex
Drop Zone
Vaby
APL
PMTC
G-4
J-90
Mountain Springs Road Borrow pit
Bullpup Complex
ALAST
BAKER
Shrike Complex
FAE
Ramex
Sandia
Drop Zone
Wilson Canyon
FLR-3
Sandy Van
K-3
DZ
GEORGE
G-6
Phalanx
Burro Cyn Test Arenas
Hans Site
Red Eye North
Tower11 Complex
Midas East
3" Impact
G-9
C-1
Aircraft Survivability Complex
HIVAS
LFT&E
HIVAS 1
HIVAS 2
Aircraft Survivability
K2 Gunnary Range Complex
Coliseum
PMCF
Bay 8 (Skytop)
Bay 7 (Skytop)
Bay 2a (Skytop)
Bay 4 (Skytop)
Bay 6 (Skytop)
Bay 2 (Skytop)
CT-4
Bay 1 (Skytop)
CBAT M3 Test Bay
LTF Site 2
CT-1
Loveseat (T-Range)
LTF Site 1
Burn Room (Fire Sciences)
ORDNANCE TEST AND EVALUATION
VERA
MAIN MAGAZINES
PROPULSION LABORATORIES
MAINSITE
ARMITAGE AIRFIELD
CHARLIE
SNORT
SNORT Complex
Kennedy Stands
G-2
Minideck
Predator Ground Control
Area R Complex
B-4 Track
B-3
B-1D
B-1B
B-1A
B-1C
B-1F
B-2
LB
C-3 SAM Site
C-3 #2
C-3 #1
C-2
B2 CIED
Midas West
Pearsonville
5 Mile Canyon Rd
Valley Wells
Trona Wildrose Rd
Trona
Trona Rd
Indian Wells
14
178
Inyokern
Isabella Walker Pass Rd
Midland Tr
Three Flags Hwy
Ridgecrest
China Lake Blvd
N
5
0
5 miles
LEGEND
Target
Target Buffer
Test Site
Test Area Buffer
Facility and Building Sites
Land Management Unit
Installation Boundary
County Boundary
CHINALAKEEIS/050b
Proposed Action
Military Land Uses, North Range
Figure 2-12


INYO COUNTY
NAWS CHINA LAKE NORTH RANGE
Trona Wildrose Rd
Trona
Trona Rd
178
SAN BERNARDINO COUNTY
TRONA PINNACLES RECREATION LANDS
Wingate Airfield
Convoy East (SR)
KIM Site
BROWN MTN
MOJAVE B NORTH
Layton Pass
Convoy South (SR)
Johnson Mine
Straw Peak
POTTS Peak
Slate Range Site
Charlie Airfield
Fresh Site
Airforce Drop Zone
RBOC
5" Impact
Sr Gun Range
Pole Site
BEAR
RANDSBURG WASH
Black Mtn
No Name Site 2
Photo Knob
IGLOO
Drop Zone
Land Site 2
FLASH Site Complex
Sea Site 3
Marine
Northwest Site
North Tower Site (Winch Towers)
North Tower
SR Drop Zone
No Name Site 1
TACAN (ROTR 6)
STAR site
Bunker Site
Land Site 3
Bunkers Radar Site
Garcia Site
Land Site 4
Land Site 1
Sea Site 2
Fuse
GHOST (Echo 8)
C-130 Airstrip
Tower 9
Igloo
Y Site 1
Sea Site 1
TSPI
UAV Site
South Tower Site
Parking Lot
RANDSBURG WASH
Drop Zone
NATO
Photo Target
MOJAVE B SOUTH
Pyramid Peak
Northwest Target Complex
Bullseye
Superior Valley Target Complex
SUPERIOR VALLEY
Airforce A
Superior Valley Compound
Airforce C
Airforce B
FORT IRWIN NATIONAL TRAINING CENTER / NASA GOLDSTONE COMPLEX
N
5
0
5 miles
LEGEND
Target
Target Area Buffer
Test Site
Test Area Buffer
Facility and Building Sites
Land Management Unit
Installation Boundary
County Boundary
CHINALAKEEIS/051a
Proposed Action
Military Land Uses, South Range
Figure 2-13

For analysis purposes, RDAT&E and training events were divided into the following categories: range flight events, range ground events, and munitions and energetic material expenditures. Airfield flight operations were also captured. These areas of analysis provide the quantifiable metrics needed to assess environmental impacts in Chapter 4. Table 2-1 shows a crosswalk relating the areas of analysis to the previously discussed mission areas. The table also indicates how the areas of analysis relate to the expansion of unmanned systems and DE weapons testing. The specific increases associated with the Proposed Action are presented in Table 2-2 at the end of this chapter and are discussed in the following subsections.

Table 2-1
Crosswalk of EIS/LEIS Areas of Analysis to Mission Areas

Area of Analysis	Mission Areas									
	Up to 25% Increase in Proposed Action								Expansion	
	A-A	S-A	A-G	S-S	E&M	EM	TT	GTT	US	DE
Range Flight Events	♦	♦	♦		♦	♦		♦	♦	♦
Airfield Flight Operations	♦		♦		♦	♦			♦	♦
Range Ground Events				♦	♦	♦	♦	♦	♦	♦
Munitions & Energetic Material Expenditure	♦	♦	♦	♦	♦		♦	♦	♦	

Mission Areas:
A-A = Air-to-Air
S-A = Surface-to-Air
A-G = Air-to-Ground
S-S = Surface-to-Surface
E&M = Energetics and Munitions
EM = Electromagnetics
TT = Test Track
GTT = Ground Troop Training
US = Unmanned Systems
DE = Directed Energy

Range Flight Events

Range flight events are any flight operations using the NAWSCL ranges for RDAT&E or training. These include aircraft originating from Armitage Airfield or any other military installations. Range flight events quantified in Table 2-2 include flight hours, supersonic flight events, aircraft sorties, and Unmanned Aerial System (UAS) flight hours. NAWCWD analysis indicated a potential increase of up to 25 percent for all range flight events with the exception of unmanned aerial systems, which would expand beyond 25 percent under the Proposed Action.

Subsonic. Subsonic flight events would increase by up to 25 percent over baseline conditions. This would include both annual flight hours as well manned aircraft sorties. A sortie is defined as a single aircraft operating in a single airspace. The NAWSCL VX-31 and VX-9 squadrons would continue their missions from Armitage Airfield. Subsonic events would continue to occur over the entire North and South Ranges.

Supersonic. Supersonic flight events would increase to approximately 125 events per year (Table 2-2). Supersonic flight events would continue to occur over both the North and South Ranges.

Unmanned Aerial Systems. UAS vehicle types are separated into four groups based on their size: Group 1 vehicles weigh 0 to 20 pounds (0 to 9 kilograms); Group 2 vehicles weigh 21 to 55 pounds (9.5 to 25 kilograms); Group 3 vehicles weigh 56 to 1,320 pounds (25.4 to 600 kilograms); and Group 4 and Group 5 vehicles weigh more than 1,320 pounds (600 kilograms). Examples of UAS types for each group are provided in Appendix B.

UAS may be air- or ground-launched using conventional or unconventional means. Larger categories of UAS typically use established airfields and runways for take-off and landing. Smaller categories of UAS may be launched on-range or use unconventional take-off systems such as catapults, slingshots, or by hand. In addition, UAS may be launched from platforms such as aircraft, vehicles, or tethering towers. Recovery methods may include conventional landing, vertical/short takeoff and landing (VSTOL), net, wire, arresting gear, dirt strip, or intentional crash.

Testing of UAS would support the development of new generation unmanned systems platforms and their associated sensors and payloads. Sensors deployed for intelligence, surveillance, and reconnaissance, electro-optical, and infrared would be the same as those normally associated with manned systems. Payloads and expendables would also be similar to those associated with manned aircraft. UAS test and training events may range from a single system, to a swarm of UAS, to large-scale integration testing between UAS and UGS. Integrated testing between UAS and manned aircraft may also be required. Due to their increasing role in the military theater, flight hours for all UAS groups would increase more than 25 percent from current flight hour numbers (Table 2-2). UAS flight events would occur in North and South Range airspace.

Airfield Flight Events

Airfield flight events are defined as flights that originate and/or terminate at Armitage Airfield (one take-off and one landing equals two flight events). These flight events either use the NAWSCL ranges or continue on to other locations within the R-2508 complex or other ranges and airfields. Airfield flight events would increase by up to 25 percent over current conditions (Table 2-2).

Directed Energy Events

A DE weapon system emits energy in a manner that offers the potential to deny, disrupt, disable, or destroy target electronics or the potential to cause mechanical damage to structures, platforms, or other equipment. It can also provide a nonlethal anti-personnel capability. DE weapon systems that are used at NAWSCL include HEL and HPM emitters, and are briefly described below. Additional information can be found in Appendix B.

High-Energy Laser. HEL weapon systems are intended to damage or destroy enemy systems. These weapons may be integrated onto land, aircraft, or ship platforms, and would be used to enhance area defense, aircraft self-protection, strategic and tactical missile defense, and precision strikes. Types of HEL systems anticipated for testing at NAWSCL include solid-state, fiber, carbon dioxide (CO_2), free electron, and closed-cycle chemical oxygen iodine lasers. Power levels would be expected up to and including megawatt class, and wavelength levels would range from nanometers to micrometers. Appendix B provides a summary discussion of laser types.

High-Power Microwave. HPM weapon systems offer the potential to deny, disrupt, disable, or destroy target electronics. An HPM can also provide a nonlethal anti-personnel capability. These weapons may be integrated onto land, aircraft, or ship platforms, and are used to enhance both anti-electronic and nonlethal anti-personnel capabilities. Types of HPM systems anticipated for testing at NAWSCL include narrow band, wide band, and ultra wide band systems. HPM testing would be largely in support of testing as defined by MIL-STD-464, Department of Defense Interface Standard for Electromagnetic Environmental Effects 464.

Due to their increasing role in military theater, the tempo of HEL and HPM activities would increase more than 25 percent above baseline conditions. HEL and HMP activities would each increase by up to 115 test days for a total of approximately 230 test days per year. HEL and HPM testing would include air-to-air, air-to-ground, surface-to-air, surface-to-surface, and electromagnetic scenarios as well as static tests. Tests would occur on travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, and instrumentation sites.

Range Ground Events

Range ground events occurring at NAWSCL include ground-based test and training activities, support activities, and facilities and maintenance.

Ground-Based Test and Training Events

The majority of ground-based test and training events at NAWSCL are conducted by Installation tenants. Activities conducted by NAWCWD include unmanned ground systems (UGS) events, energetic tests, aircraft survivability tests, CIED tests, and track tests. These activities occur throughout the North and South Ranges. NAWCWD also supports and schedules small-scale GTT events, but to a much lesser degree and on a non-interference basis with the RDAT&E mission. GTT events involve Installation tenants or outside customers (e.g., Special Forces), are typically individualized, and are related to tenant/customer requirements. Other tenants conducting ground-based test and training activities include, but are not limited to, Explosive Ordnance Disposal Mobile Unit Three (EODMU-3), Explosive Ordnance Disposal Training and Evaluation Unit One (EODTEU-1), and the Navy Construction Battalion, Naval Construction Training Command, otherwise known as Seabees.

NAWCWD analysis indicates a potential increase of up to 25 percent for all ground-based test and training activities with the exception of UGS events and track tests. To review the actual thresholds under the Proposed Action, see Table 2-2.

UGS Events

A variety of test and training activities may involve the use of UGS. UGS vehicle types are separated into three groups based on their size: Group 1 vehicles weigh 0 to 5,000 pounds (2,268 kilograms); Group 2 vehicles weigh 5,000 to 15,000 pounds (2,268 to 6,804 kilograms); and Group 3 vehicles weigh more than 15,000 pounds (6,804 kilograms). Appendix B provides a summary of UGS types.

Due to their increasing role in the military theatre, UGS events are anticipated to expand more than 25 percent from baseline conditions. UGS would include both wheeled- and tracked-vehicles. Associated activities would include conducting deployment and recovery, establishing central command centers, and retrieving systems that have either crashed or otherwise failed to operate. UGS predominantly operate on existing roads or road shoulders or in established target or test areas, although small systems may have off-road requirements.

Energetics Tests

Energetics tests involve the use of energetic materials such as propellants and explosives. These tests are primarily conducted by the Ordnance T&E Division in specialized areas of the Ordnance T&E and Propulsion Laboratories land management units (LMUs) as well as other Munitions T&E areas, including Area R and Burro Canyon in George Range and Upper and Lower Cactus Flats. The following energetic tests may increase up to 25 percent as a result of the Proposed Action:

- Insensitive munitions tests include safety and insensitive munitions testing on bombs, rockets, ammunition, flares, and fuses. Safety tests involve drop tests from a 40-foot (12-meter) drop tower. Insensitive munitions tests include bullet impact, fragment impact, slow and fast cook-off, shape-charged jet, and sympathetic detonation.

- Propulsion tests involve propulsion testing of motors for standard size tactical missiles and large strategic missiles. Air breathing engine/material evaluation tests analyze the functionality and suitability of air-breathing ramjets and material evaluation of radomes and other materials.

- Warhead tests involve warhead performance testing for lethality. Tests analyze fragment and blast kill mode capacities. Warhead delivery vehicles include bombs, missiles, and rockets.

Aircraft Survivability Tests

Aircraft survivability tests are conducted at the Weapons Survivability Laboratory to provide empirical data on the vulnerability and survivability of aircraft systems and subsystems to combat threats prior to Fleet production. Test activities include structural response to ballistic impacts; fire-detection and fire-extinguishing systems; warhead detonations against airframes or running engines; thermal and structural tests; infrared (IR) signature tests; static and simulated in-flight crew ejections; and aerodynamic studies for flutter, fusing, aircraft stores separation, and parachute systems. Weapons Survivability Laboratory tests may increase up to 25 percent.

CIED Tests

CIED tests involve the T&E of CIED technologies and systems and emulate theater-relevant threats to provide necessary data in response to theatre requirements. Activities are generally conducted at the Joint Counter IED Facility (JCIF), B-2 CIED test area in Baker Range, Coles Flat CIED test area, and at the Supersonic Naval Ordnance Research Track (SNORT), but are sometimes conducted at other areas, and may be expanded further as the CIED mission evolves. CIED test events may increase up to 25 percent annually.

Track Tests

Track test facilities at NAWSCL include the SNORT and G-4 Track. SNORT is a 4.1-mile (6.6-kilometer), heavy-duty dual-rail track capable of propelling test vehicles at hypersonic speeds. Typical SNORT tests include target penetration using live HE warheads, live fuses, or both; aircrew ejection systems; bomb, missile, or rocket systems; guidance and fusing systems; free-flight terminal ballistics; environmental; soft recovery; electronic warfare and countermeasures; vehicle and barrier; and movie production special effects. The G-4 track is a 3,000-foot (914-meter), heavy-duty dual-rail track overlooking Airport Lake. Most G-4 tests involve launch of the test article.

Due to past track maintenance, the baseline numbers of track tests were unrepresentatively low. Therefore, to accommodate a more realistic tempo, track test events are expected to increase more than 25 percent from the baseline.

Ground Troop Training

GTT at NAWSCL involves small-scale, theater-relevant combat training of ground troops. Training is based on customer requirements and can be accomplished as part of a larger test activity or as a discrete

training event. Examples include force reconnaissance, insertion and extraction, close air support, fleet area control and surveillance, and other types of tactical exercises. Activities conducted by EODTEU-1 and the Seabees outside of their normal operating areas would also be captured in this category. All GTT activities would be managed according to the established standard operating procedure identified in Section 2.1.

Ground troops may be on foot, with or without military support animals (i.e., horses, mules, or military working dogs) and may involve multiple support vehicle types. GTT events may also involve support aircraft (manned or unmanned; fixed or rotary wing) and access to distinct terrain such as mines, caves, tunnels, sloped areas, or vegetated areas to satisfy unique training requirements.

Small group training (approximately 8 troops) without support vehicles may be conducted in currently approved operating areas as well as undisturbed areas throughout the North and South Ranges. GTT activities occurring in undisturbed areas would have no associated ground-disturbing activities. These activities may occur on an as-needed basis. Small group training overland would be intentionally varied in order to reduce the possibility of the formation or marking of trails by ground troops. Development of fighting positions, observation points, use of explosives devices, or periods of concentrated activity would not be permitted outside existing travel surfaces (i.e., roads, turnouts, or parking lots), or highly developed and disturbed portions of target areas, test sites, and instrumentation sites. Only pedestrian traffic, including pack animals and working dogs, would be approved for off road travel.

GTT involving larger groups (not to exceed 40 troops) or using support vehicles may only occur in areas where ground disturbance would not be increased, such as existing travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, and instrumentation sites. These training activities may expand by up to 25 percent. Small group training with support vehicles may occur on an as-needed basis.

EOD Land Demolitions

Explosive Ordnance Disposal (EOD) land demolitions involve the treatment of energetic hazardous waste generated from R&D laboratory activities, as well as munitions waste including both nonstandard items that are no longer useful for RDAT&E purposes and standard items that are expired, in excess, or unsafe. EODMU-3 performs these activities at the permitted facility in Burro Canyon, B-Mountain demolition range, and other designated detonation sites in the North and South Ranges. The unit also performs blow-in-place activities throughout the ranges as necessary to safely dispose of UXO or to support range activities. EOD land demolitions would increase up to 25 percent.

EOD Technician Training

EODTEU-1 conducts training at the Naval Expeditionary Combat Command Training Complex, commonly referred to as the EOD Training Facility, located in Darwin Wash. Training occurs in two-week interval classes and prepares EOD technicians for the combat environment including mine-resistant ambush protected driving, crew-served weapons proficiency, urban environment training, and enemy munitions safety procedures. The training complex provides operationally representative training environments that allow for the live-fire use of a variety of weapons, including small arms and crew-served weapons. These include rifles and pistols, as well as vehicle-mounted large-caliber automatic weapons and automatic grenade launchers. Small amounts of explosive materials such as composition-4 explosives (C-4) or plastic explosives are also used in some training scenarios. Existing facilities include a pistol range, grenade and two rifle ranges, a water storage pond, a live-fire convoy track, building façades, a tactical driving racetrack, and a Military Operations in Urban Terrain Facility.

Training class tempos within the complex may expand up to 25 percent. As the EODTEU-1 mission evolves, training may also be required outside of the Darwin Wash area. These activities would be considered as GTT events and are captured within GTT event numbers.

Construction Battalion Training

Seabees conduct training activities at the Mineral Products Training Complex and at discrete locations throughout the Installation. Activities in the Mineral Products Training Complex include drilling, blasting, and stockpiling aggregate in the existing quarry, and crushing, cleaning, and sorting aggregate and manufacturing asphalt and concrete in the mineral processing area.

The Seabee Well Drilling School provides opportunities for water well drilling training. Training on drilling, repairing, and plugging/abandoning water wells is conducted throughout the Installation on an as-needed basis. To minimize surface disturbance, proposed water wells are and would continue to be located adjacent to existing roads, and well pads are and would continue to be designed to be as small as practicable while still accommodating the drill rig and all support vehicles and materials. Well pads that cannot be located in disturbed areas would be cleared of vegetation. A sump would be dug to contain the cutting and drilling mud. Once the well is drilled and the sump is dry, the sump would be backfilled and contoured. Site-specific environmental documentation is prepared for the drilling of new water wells. Construction battalion training activities are considered GTT events and are captured within GTT event numbers.

Ground-Based Support Events

All RDAT&E and training events may have a ground component, involving support activities required for collecting data essential to evaluate an event's success. These activities are described in the following activities.

Pre-event/setup activities: Pre-event/set-up activities involve the installation/placement of portable and/or stationary instrumentation or equipment for event monitoring and data acquisition near target and test sites and at other remote locations. Shallow trenching to cover cables and instrumentation, and burying certain targets/test items up to 10 feet (3 meters) deep to simulate theater conditions would also occur.

Target-related activities: Target-related activities include target construction, placement/installation, maintenance, recovery, removal, cleanup (including remediation of any released hazardous waste), and appropriate waste disposal.

Launch activities: Launch activities involve the air or ground launch of a test article or target.

Post-event/teardown activities: Post-event/teardown activities involve test article recovery, debris mapping, instrumentation/equipment teardown, removal of buried targets/test items and instrumentation, and cleanup of the target/test site, including remediation of any released hazardous waste and appropriate waste disposal.

All related support equipment and instrumentation are confined to roads, road shoulders, instrumentation pads, and Kineto Tracking Mount locations. Equipment is transported to and from these areas on existing access roads, although off-road travel may be required occasionally. Support vehicles may include all terrain forklifts, pickup trucks, buses, delivery vehicles, all terrain vehicles (ATVs), wheeled and tactical vehicles, UGS (both wheeled and tracked), and other heavy equipment (e.g., construction vehicles). Hand placement of test support items in undisturbed areas would also occur.

Targets

A variety of target types are used to support test and training events at NAWSCL. A description of these targets is provided in Appendix B. Targets are used to ensure the accuracy and effectiveness of weapons systems, munitions, sensors, or other military equipment being developed. Targets may be involved in both static and dynamic activities and may be engaged from both the air and ground. They are often constructed according to customer requirements and are designed to replicate theatre-relevant threats.

Under the Proposed Action, the use of stationary targets may increase up to 25 percent. Threshold numbers specific to mobile targets (i.e., aerial and vehicular land targets) are provided in Table 2-2.

Target and Test Sites

Existing target and test sites (indicated in Figures 2-12 and 2-13 and described in Appendix B) would continue to be used to support test and training activities. Target and test sites include impact areas for munitions, instrumentation sites, weapon and target launch sites, weapon firing sites, special purpose ranges and facilities, and roads.

Target areas provide impact areas for delivered munitions and may include the use of stationary or mobile targets. Target areas may also be used for test purposes. Test areas, in addition to existing roads and instrumentation sites, are used to evaluate a weapon system or subsystem reaction to a variety of simulated conditions. In conjunction with the proposed increase in RDAT&E and training activities, target and test site use would also increase up to 25 percent and include the introduction of moving targets in the Northwest Target Complex.

Ground Facilities and Maintenance Activities

Current facility maintenance activities may include the construction of utilities; maintenance and repair of internal and external elements of buildings; construction of new buildings; demolition of existing buildings; and maintenance, repair, and construction of paved and unpaved roads and other travel surfaces.

Utilities include drinking water, wastewater, steam, gases, fuels, and electrical and communications systems.

Maintenance, repair, renovation, rehabilitation, remodeling, construction of new, and demolition of existing buildings would continue to occur on an as-needed basis. Environmental documentation outside of this EIS/LEIS would be required for many of these actions, particularly when affecting historic structures.

Maintenance, repair, and construction of paved and unpaved roads, parking lots, airfield pavements (runways, taxiways, and parking aprons), fences, drainage and flood control channels, landscaping, and sidewalks would continue to occur as needed. In accordance with the proposed increase in RDAT&E and training activities, facilities and maintenance activities are expected to increase at approximately the same rate.

Munitions and Energetic Material Expenditures

In general, all target and test sites at NAWSCL are authorized for the use of inert munitions; however, HE use is limited to specific sites. HE use represents approximately 20 percent of all the munitions annually expended on NAWSCL ranges with the other 80 percent being inert. Appendix B indicates which sites are authorized for HE use as well as energetic material expenditure. In conjunction with the proposed increase in RDAT&E and training events, the amounts of munitions and energetic material expended would also increase up to 25 percent. Table 2-2 shows specific types of munitions and energetic materials and their thresholds under the Proposed Action.

2.3.1.3 Nonmilitary Uses

Nonmilitary uses would not change from current conditions under the Proposed Action. Public access would continue to be limited to specific areas on a case-by-case basis due to established safety and security requirements. Limited public access to designated areas would continue to be permitted according to the terms and conditions granted by the NAWSCL Commanding Officer. The DoN would

continue to permit nonmilitary uses to the extent that these activities are compatible with military missions; do not create a safety, security, fiscal, or regulatory risk; and do not adversely impact natural and cultural resources at NAWSCL.

Figure 2-14 illustrates areas on the North Range where nonmilitary land uses would be permitted in light of the factors stated above (there are no nonmilitary land use areas on the South Range). A discussion of nonmilitary uses is provided below and shown in Table 2-2.

Native American Use

Native American access to NAWSCL-administered lands would continue to be accommodated in accordance with the existing Memorandum of Agreement (MOA) between the DoN and Native American tribes. Accordingly, access to the Coso Hot Springs and Prayer Site would continue to be permitted. Access to the area is granted under the terms of the MOA for religious and traditional purposes. Requests for access to other locations on NAWSCL would continue to be considered on a case-by-case basis.

Geothermal Use

The Coso KGRA is located in the Coso Geothermal LMU and encompasses approximately 153,600 acres (62,160 hectares) extending across a portion of the North Range and onto adjacent BLM land. The Coso geothermal development is run by a single operator, the Coso Operating Company, in part as a DoN contractor (Navy One and Two power plants) and as a BLM geothermal lease holder (BLM East and West power plants). These four power plants are located within the Coso Geothermal LMU.

Research and Education

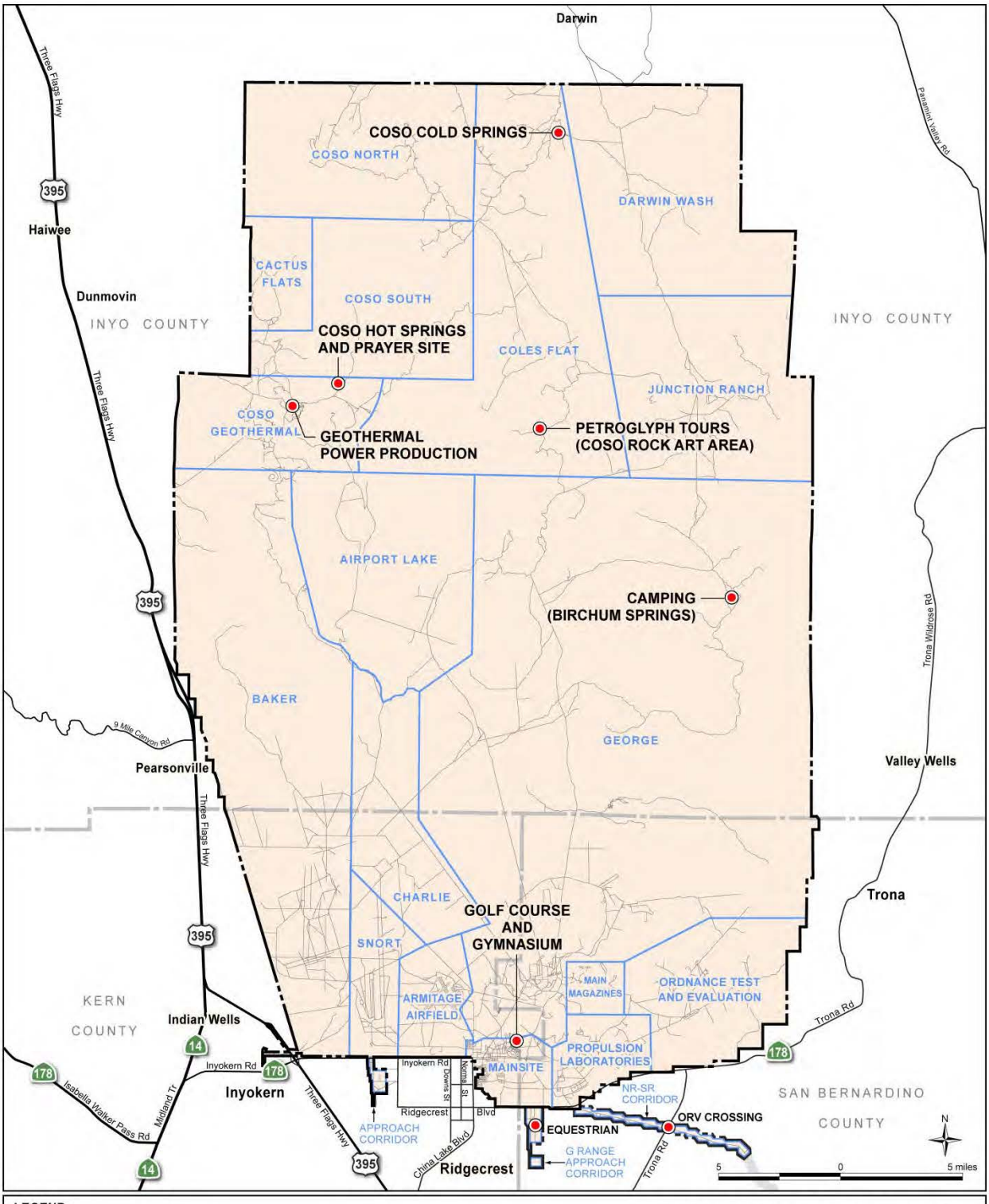
Access to NAWSCL-administered lands for ongoing research and educational programs would continue to be allowed to the extent that activities are consistent with the DoN's mission requirements. Research and educational activities vary from year to year depending on the need and interest of outside parties, and on NAWSCL environmental resources managers. Typically, research projects focus on natural or cultural resource field studies and help augment existing knowledge of sensitive and protected environmental resources within NAWSCL. In addition, as a national-class research and development center, NAWCWD maintains extensive ties to academia and hosts continual access and collaboration activities at NAWSCL for a wide range of topics. Any new proposals for access related to research or education would be considered on a case-by-case basis.

Recreation

NAWSCL would continue to allow limited mission-compatible recreational uses within its boundaries on a case-by-case basis. These uses are described below.

Camping. Camping would continue to be permitted on a case-by-case basis. Recreational camping requires a Command-approved escort trained in environmental, security, and safety issues. Before camping, the NAWSCL escort provides a briefing on NAWSCL safety and security, and protection of natural and cultural resources. Campers are limited to 16 individuals per night; Installation safety and security measures are enforced.

Golf and Gym Access. Access to the gymnasium and golf course would continue to be permitted for authorized members of the public. These facilities are located at Mainsite.



Proposed Action, Nonmilitary Land Uses, North Range

Figure 2-14

Hiking. Hiking on existing roads and trails would continue to be allowed. Hiking currently occurs on B-Mountain.

Hunting. Chukar hunting is limited to a discrete area on the North Range with a limited number of escorted hunters. Hunts occur only during years when there is an abundance of chukar, and hunts are open to members of the military, youth, and public.

Equestrian Use. Equestrian use of the G-Range Approach Corridor (south of Mainsite along the southern boundary of the North Range) would continue to be permitted during scheduled events. Equestrian use would be restricted to existing trails.

Off-Highway Vehicle Use. Off-highway vehicle (OHV) use would continue to be allowed at BLM scheduled public events crossing the Randsburg Wash Access Road. These BLM events would be expected to continue at approximately eight per year. Per agreement between the DoN and BLM, off-road crossing is permitted only over the Randsburg Wash Access Road twice per event within an established footprint.

Petroglyph Tours. Public access to Little Petroglyph Canyon would continue to be permitted on a case-by-case basis. Petroglyph tours are described in NAWSCL Instruction 5532.1, Use of Range Areas. Most tours are limited to Little Petroglyph Canyon and are conducted under a cooperative agreement between NAWSCL and the Maturango Museum in Ridgecrest. Museum-sponsored tours to Little Petroglyph Canyon are limited to 6 tours of up to 50 individuals each per month, with additional tours of smaller groups allowed. Additional tours of Little Petroglyph Canyon (not sponsored by the museum) are allowed on a case-by-case basis, provided the total number of individuals in the canyon at any given time does not exceed 75. These public tours are conducted by certified tour guides who are trained in NAWSCL safety and security requirements, including measures for protecting the rock art.

Bird Watching. The Audubon Society's annual bird counts (including the Christmas Bird Count, the Birdathon, and survey of birds of the Indian Wells Valley [IWV]) would continue to be allowed. Typical attendance is less than 20 people per event. Individuals make bird observations and record trends in bird populations.

Photography. Limited public photography, under conditions established by the DoN and at the DoN's discretion, would continue to be allowed. Generally, photography is allowed in areas associated with recreation permits (e.g., Birchum Springs, Renegade Canyon, and Little Petroglyph Canyon).

2.3.1.4 CLUMP Update

Under the Proposed Action, NAWSCL would revise the 2005 CLUMP and implement the revised CLUMP. The CLUMP incorporates established standard procedures for avoidance and minimization of impacts to environmental resources. These standard procedures include the following:

- Conducting early coordination with the action proponent to discuss the scope of proposed projects, including the type of project, location, and timing;
- Siting projects in disturbed areas or in areas that are not environmentally sensitive;
- Providing environmental briefings to alert range users and personnel to the presence of protected or sensitive resources and to notify users and personnel of NAWSCL compliance requirements and of the expectations to conform to established policies and procedures;
- Conducting pre-project site surveys to support the NEPA analysis for projects not included in the ROD of the EIS/LEIS where new land-disturbing activities would occur in desert tortoise habitat;

- Implementing required measures to avoid adversely affecting sensitive resources; and
- Conducting monitoring for ground-disturbing construction projects to ensure that avoidance and minimization measures per the 2013 BO would be employed and remain effective (test and target areas would not require biological monitoring).

By implementing these procedures, most projects would be sited in existing disturbed areas, thereby avoiding potential impacts to environmental resources. Potential impacts from a project would often be minimized by relocating the project to an existing disturbed area that is sufficiently similar to the area initially proposed for the project, or by reconfiguring the area boundary to avoid a sensitive resource. When new undisturbed areas would be required to support a project, environmental personnel work with project planners and range users to ensure that the project affects the smallest area possible. Potential impacts to undisturbed lands from new or ongoing projects would be further minimized through environmental briefings to range users and range personnel, and by restricting vehicular traffic to established roads. Environmental briefings provide range users and personnel with updated information on the types of sensitive resources found on the ranges, specific areas to be avoided, and reporting methods to follow in the event a sensitive resource is inadvertently impacted by an activity. Controlled off-road traffic is permitted only for specific purposes such as munitions or test item recovery and maintenance activities. Impacts to sensitive resources would be further minimized through compliance with the provisions of USFWS BOs for federally threatened and endangered species and the PA being finalized with the California State Historic Preservation Officer (SHPO)/Advisory Council on Historic Preservation (ACHP) for cultural resources.

As the strategic planning vehicle for NAWSCL, the CLUMP incorporates management guidelines from the Installation's 2014 INRMP and successor documents, 2012 ICRMP and PA, 2011 AICUZ Update, 2012 Encroachment Action Plan Update, and the NAWCWD Range Complex Management Plan.

2.3.2 Baseline Alternative/Updated No Action Alternative (Alternative 2)

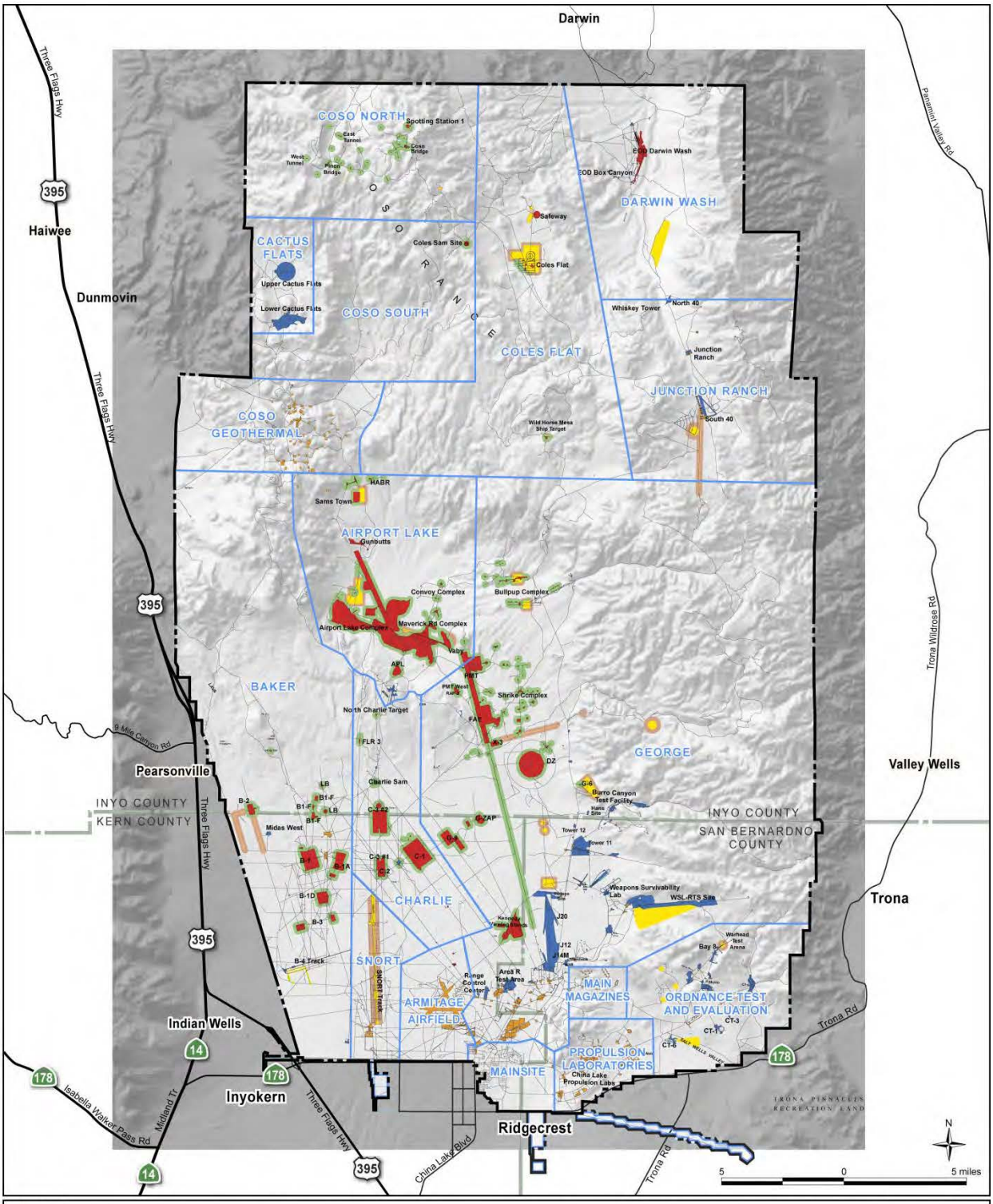
The Baseline Alternative/Updated No Action Alternative (Alternative 2), also considered the "No Action Alternative" with respect to DoN decision making, includes Congressional renewal of the land withdrawal (25-year renewal) with continuation of military RDAT&E and training events at current levels. Nonmilitary activities would continue according to current patterns of use. The existing CLUMP would be updated, as appropriate, and implemented to manage land use and environmental resources at NAWSCL. Natural and cultural resources would continue to be conserved with implementation of the CLUMP management process. Key components of the Baseline Alternative/Updated No Action Alternative are described in the following sections.

2.3.2.1 Land Withdrawal

Similar to the Proposed Action, this alternative would also continue the existing withdrawal of 1,044,126 acres (422,544 hectares) of public land in Kern, Inyo, and San Bernardino counties for military use.

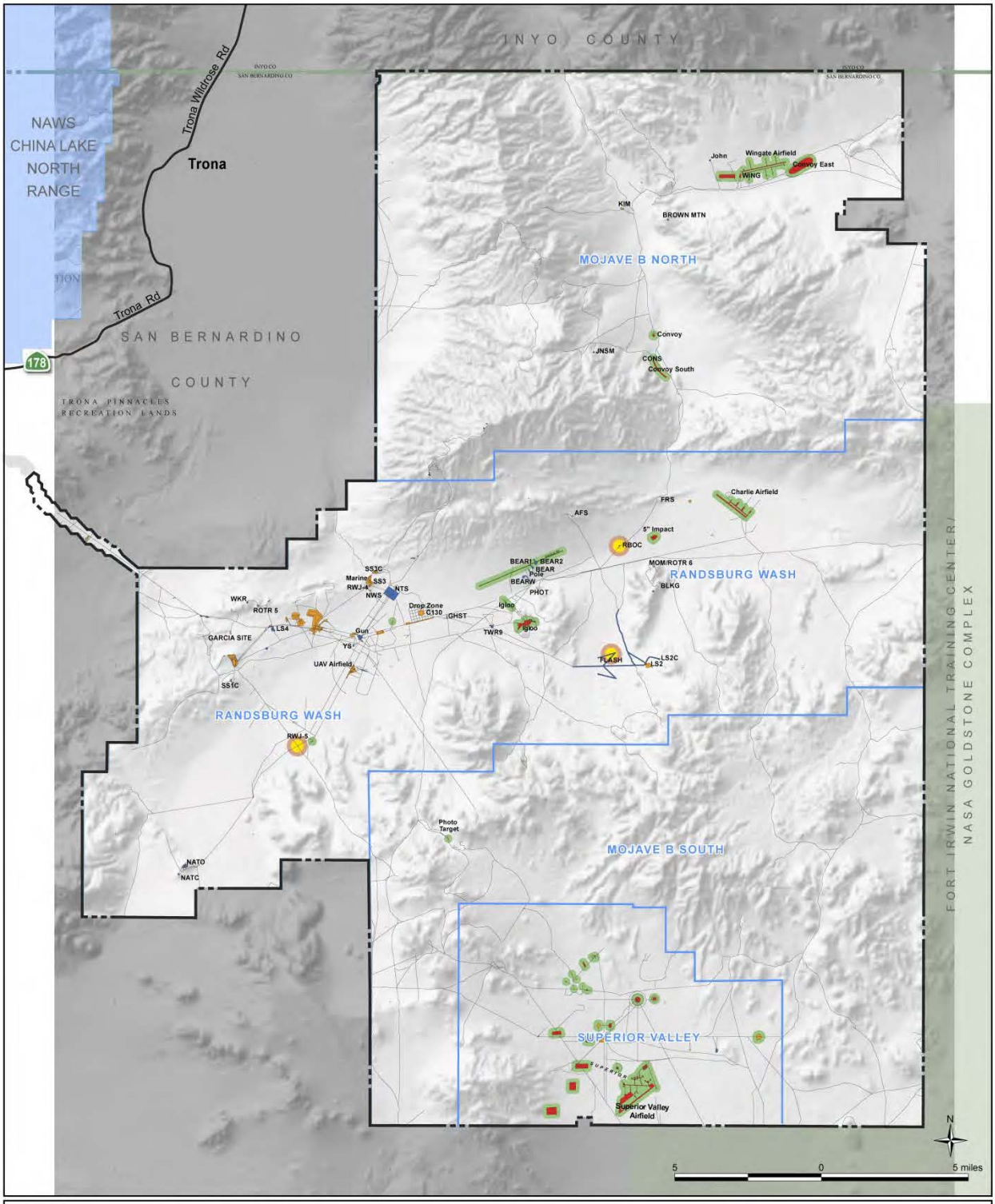
2.3.2.2 Military Uses

Military RDAT&E and training events under the Baseline Alternative/Updated No Action Alternative would continue as under current conditions. Military activities would not include expansion of unmanned aerial and surface systems or DE weapons systems. Figures 2-15 and 2-16 show the military land uses proposed as part of the Baseline Alternative/Updated No Action Alternative for the North Range and South Range, respectively. The specific RDAT&E and training events associated with the Baseline



Baseline Alternative/Updated No Action Alternative Military Land Uses, North Range

Figure 2-15



Baseline Alternative/Updated No Action Alternative Military Land Uses, South Range

Figure 2-16

Alternative/Updated No Action Alternative are presented in Table 2-2 of this chapter and are discussed in the following subsections.

Range Flight Events

The Baseline Alternative/Updated No Action Alternative would result in the continuation of military RDAT&E and training activities at NAWSCL at current levels. Existing ground-based support facilities would continue to support flight events. The activities outlined under the Baseline Alternative/Updated No Action Alternative serve as the foundation for evaluating the Proposed Action (Alternative 1) and No Action Alternative.

Subsonic. Subsonic flight events for RDAT&E and training would continue at current levels, including approximately 5,750 flight hours per year (Table 2-2). The VX-31 and VX-9 squadrons would continue their missions from Armitage Airfield. Most test flight events stage from Armitage Airfield; however, some test and training flight events originate from other military airfields.

Supersonic. Supersonic aircraft events at NAWSCL would continue at current levels. Approximately 100 supersonic events per year would be conducted (Table 2-2).

Supersonic flights would normally be conducted during the day (i.e., 7 a.m. to 5 p.m.) over both the North and South Ranges; however, some supersonic flights would occur during nighttime hours.

Unmanned Aerial Systems. The number of UAS flights would continue at current levels. There would be approximately 1,587 annual UAS flight events under the Baseline Alternative/Updated No Action Alternative (Table 2-2). UAS flights would be conducted over both the North and South Ranges. A brief description of UAS flight events is provided in Section 2.3.1.1 and Appendix B.

Airfield Flight Events

Airfield flight events for RDAT&E and training would continue at current levels. Approximately 18,210 annual flight events from Armitage Airfield would occur (Table 2-2). Flight events from Armitage Airfield either use the NAWSCL ranges or continue on to other locations within the R-2508 complex or other ranges and airfields.

Directed Energy Events

The tempo of DE activities would continue at current levels. HEL and HPM activities would each include approximately 50 test days annually, for a total of approximately 100 annual test days under the Baseline Alternative/Updated No Action Alternative (Table 2-2). DE activities would occur within both the North and South Ranges; a brief description of DE systems is provided above in Section 2.3.1.1 and Appendix B.

Range Ground Events

Ground-based activities occurring at NAWSCL include test and training events, support activities, and facilities and maintenance.

Ground-Based Test and Training Events
The ground-based test and training events would continue to include UGS activities, energetic tests, aircraft survivability tests, CIED tests, and track tests. These activities occur within specialized target and test sites of the North and South Ranges. NAWCWD also supports and schedules small-scale GTT events, but to a much lesser degree and on a non-interference basis with the RDAT&E mission. GTT events involve Installation tenants or outside customers (e.g., Special Forces), are typically individualized,

and are related to tenant/customer requirements. Other tenants conducting ground-based test and training activities include, but are not limited to, EODMU-3, EODTEU-1, and the Seabees. RDAT&E and training events for the Baseline Alternative/Updated No Action Alternative are included in Table 2-2.

UGS Events

Test and training events would continue the use of the three groups of UGS. UGS activities would continue at baseline conditions. UGSs would include both wheeled- and tracked-vehicles. Associated activities would include conducting deployment and recovery, establishing central command centers, and retrieving systems that have either crashed or otherwise failed to operate. UGS predominantly operate on existing roads or road shoulders or in established target or test areas, although small systems may have off-road requirements.

Energetics Tests

Energetics tests would continue to be conducted at current levels by the Ordnance T&E Division in specialized areas of the Ordnance T&E and Propulsion Laboratories LMUs as well as other munitions T&E areas including Area R and Burro Canyon in George Range and Upper and Lower Cactus Flats.

Aircraft Survivability Tests

Aircraft survivability tests would continue to be conducted by the Weapons Survivability Laboratory. Weapons Survivability Laboratory tests would continue at current levels (Table 2-2).

CIED Tests

CIED tests would continue to be conducted at the JCIFs located in Darwin Wash and Mojave B South, respectively; B-2 CIED test area in Baker Range; Coles Flat CIED test area; and at the SNORT. CIED tests would continue at current levels (Table 2-2).

Track Tests

Track test events would continue at the SNORT and G-4 Track. Typical SNORT tests include target penetration using live HE warheads, live fuses, or both; aircrew ejection systems; bomb, missile, or rocket systems; guidance and fusing systems; free-flight terminal ballistics; soft recovery; electronic warfare and countermeasures; vehicle and barrier; and movie production special effects. Most G-4 tests involve launch of the test article. Track test events would continue at current levels (Table 2-2).

Ground Troop Training

GTT at NAWSCL involves small-scale, theater-relevant combat training of ground troops. Training is based on customer requirements and can be accomplished as part of a larger test activity or as a discrete training event. Activities conducted by EODTEU-1 and the Seabees outside of their normal operating areas would also be captured in this category. All GTT activities would be managed according to the established standard operating procedure identified in Section 2.1.

Ground troops may be on foot, with or without military support animals (i.e., horses, mules, or military working dogs) and may involve multiple support vehicle types. GTT activities may also involve support aircraft (manned or unmanned; fixed or rotary wing) and access to distinct terrain such as mines, caves, tunnels, sloped areas, or vegetated areas to satisfy unique training requirements.

Small group training (approximately 8 individuals) without support vehicles may be conducted in currently approved areas as well as undisturbed areas throughout the North and South Ranges. GTT activities occurring in undisturbed areas would have no associated ground-disturbing activities. These activities may occur on an as-needed basis. Small group training overland would be intentionally varied in order to reduce the possibility of the formation or marking of trails by ground troops. Development of fighting positions, observation points, use of explosives devices, or periods of concentrated activity would not be

permitted outside existing travel surfaces (i.e., roads, turnouts, or parking lots), or highly developed and disturbed portions of target areas, test sites, and instrumentation sites. Only pedestrian traffic, including pack animals and working dogs, would be approved for off road travel.

GTT involving larger groups (not to exceed 40 individuals) or using support vehicles may only occur in areas where ground disturbance would not be increased such as existing travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, and instrumentation sites. These training activities would continue at current levels (Table 2-2).

EOD Land Demolitions

EOD land demolitions would continue to be performed by EODMU-3 at the permitted facility in Burro Canyon, B-Mountain demolition range, and other designated detonation sites in the North and South Ranges. EOD land demolitions would continue at current levels (Table 2-2).

EOD Technician Training

EODTEU-1 activities would continue at the EOD Training Facility, located in Darwin Wash. Existing facilities include a pistol range, grenade and two rifle ranges, a water storage pond, a live-fire convoy track, building façades, a tactical driving racetrack, and a Military Operations in Urban Terrain Facility. Training class tempos within complex would continue at current levels (Table 2-2).

Construction Battalion Training

Seabees would continue to conduct training at the Mineral Products Training Complex and at discrete locations throughout the Installation. Activities include drilling, blasting, and stockpiling aggregate in the existing quarry, and crushing, cleaning, and sorting aggregate and manufacturing asphalt and concrete in the mineral processing area. Construction battalion training activities are considered GTT events and are captured within GTT event numbers.

The Seabees would continue to conduct training on drilling, repairing, and plugging/abandoning water wells on an as-needed basis. The proposed water wells would be located adjacent to existing roads, and well pads would be designed to be as small as practicable while still accommodating the drill rig and all support vehicles and materials. Once the well is drilled and the sump is dry, the sump would be backfilled and contoured. Site-specific environmental documentation would continue to be prepared for the drilling of new water wells.

Ground-Based Support Events

All RDAT&E and training events may have a ground component, involving support activities required for collecting data essential to evaluate an event's success. These activities would continue to include pre-event/setup activities, target-related activities, launch activities, and post-event/teardown activities. All related support equipment and instrumentation are confined to existing approved roads, road shoulders, instrumentation pads, and Kineto Tracking Mount locations. Hand placement of test support items in undisturbed areas would also occur.

Existing target and test sites would continue to be used to support test and training events. The types of targets used to support test and training events are described in Appendix B and target and test area use would continue at current levels (Table 2-2). In general, all target and test sites at NAWSCL are authorized for the use of inert munitions; however, HE use is limited to specific sites. HE use represents approximately 20 percent of all the munitions annually expended on NAWSCL ranges with the other 80 percent being inert. Appendix B indicates which sites are authorized for HE use as well as energetic material expenditure. Target and test area use would continue at current levels (Table 2-2).

Munitions and Energetic Material Expenditures

Munitions and energetic material expenditures would continue at current levels (Table 2-2).

Ground Facilities and Maintenance Activities

Current facility and maintenance activities would continue to include the construction of utilities; communications systems; maintenance and repair of internal and external elements of buildings; construction of new buildings; demolition of existing buildings; and maintenance, repair, and construction of paved and unpaved roads and other travel surfaces. Utilities include drinking water, wastewater, steam, gases, fuels, and electrical systems. Maintenance, repair, renovation, rehabilitation, remodeling, construction of new, and demolition of existing buildings would continue to occur on an as-needed basis. Environmental documentation outside of this EIS/LEIS would be required for many of these actions, particularly when affecting historic structures. Maintenance, repair, and construction of paved and unpaved roads, parking lots, airfield pavements (runways, taxiways, and parking aprons), fences, drainage and flood control channels, landscaping, and sidewalks would continue to occur as needed.

2.3.2.3 Nonmilitary Uses

Nonmilitary uses as described under the Proposed Action would continue under the Baseline Alternative/Updated No Action Alternative. Public access would continue to be limited to specific areas on a case-by-case basis due to established safety and security requirements. Limited public access to designated areas would continue to be permitted according to the terms and conditions granted by the NAWSCL Commanding Officer. The DoN would continue to permit nonmilitary uses to the extent that these activities would be compatible with military missions; do not create a safety, security, fiscal, or regulatory risk; and do not adversely impact natural and cultural resources at NAWSCL.

Figure 2-14 illustrates areas on the North Range where nonmilitary land uses would continue to be permitted in light of the factors stated above (there are no nonmilitary land use areas on the South Range). A brief discussion of nonmilitary uses is provided above in Section 2.3.1.3.

2.3.2.4 CLUMP Implementation

Since NAWSCL is required by law to have a land management plan in place for any level of range activities, the Baseline Alternative/Updated No Action Alternative includes revision and implementation of the CLUMP, reflecting any changes in land use projected for accommodating current military activities. Management decisions and land management practices may be revised to address the changes in land use management and environmental review processes. As described under the Proposed Action, the CLUMP formalizes and streamlines land management practices; ensures operational readiness by facilitating ongoing and evolving test and training activities; protects public health and safety; protects cultural resources; and, through implementation of the management guidance of the 2014 INRMP and successor documents, conserves and protects natural resources.

2.3.3 No Action Alternative (Alternative 3)

The No Action Alternative (Alternative 3) as originally identified in the Draft EIS/LEIS assumed that the reauthorization of the withdrawal of public lands at NAWSCL would not occur and administrative control of the withdrawn land would remain with the DoN until environmental remediation and health and safety concerns were addressed to allow the return of the land to BLM. With the President signing the FY 2014 NDAA into law on December 26, 2013, the public land withdrawal at NAWSCL was reauthorized until 2039. However, the non-legislative components of the Proposed Action, which are identified in this Final

EIS/LEIS as RDAT&E and training and the tempo of these activities, remain the subject of future DoN decision-making. Because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of "no action" conditions at NAWSCL. Therefore, for the purposes of the Final EIS/LEIS, the Baseline Alternative/Updated No Action Alternative is considered to effectively represent "no action" conditions or status quo. This alternative is defined as the continuation of military RDAT&E and training activities at NAWSCL at current levels. The discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed.

2.4 POTENTIAL CUMULATIVE PROJECTS

Cumulative impacts result from "the incremental impact of actions when added to other past, present, and reasonably foreseeable future actions regardless of what agency undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (CEQ 1978).

Other projected actions in the region were evaluated to determine whether cumulative environmental impacts could result due to implementation of the Proposed Action or alternatives in conjunction with other past, present, or reasonably foreseeable future actions. These project actions are described below.

Construction and Operation of Solar Energy Facility. Several solar energy-generating facilities are proposed for the California desert regions; however, only one is in close proximity to NAWSCL. Solar Trust of America, is proposing to construct a utility-scale solar electric-power-generating facility named the Ridgecrest Solar Power Project in the high northern Mojave Desert in northeastern Kern County, California, about 5 miles southwest of the city of Ridgecrest. An alternate site is being considered in the Indian Wells Valley. The project would have a nominal output of 250 megawatts (MW), consisting of a single power plant using two solar fields.

Project facilities would occupy 1,440 acres of the 3,920-acre site, and there would be a total disturbance area (including areas outside of the facility fenceline) of approximately 1,760 acres. The project would use photovoltaic technology to generate electricity.

Continuation of Geothermal Plant Operations. The Coso KGRA, located in the central Coso Range approximately 160 miles north-northeast of Los Angeles, would continue current operations. Four geothermal power plants with nine 30-MW turbine-generator sets are located within the main production area of the Coso geothermal field. All facilities—roads, wellfields, pipelines, power plants, and transmission lines—occur within the NAWSCL North Range, with the exception of the western portion of the Rose Valley Hay Ranch water line. The Navy One and Navy Two facilities are operated by the DoN's contractor, the Coso Operating Company. The BLM West and BLM East facilities are developed on withdrawn lands, tapping geothermal resources using standard DoI geothermal leases. The Coso Operating Company operates these facilities in partnership with the leaseholders. The power plants were constructed between 1987 and 1990. The first unit went on-line in 1987 and the last units went on-line in early 1990. Total generating capacity at the Coso KGRA amounts to more than 250 MW, enough electricity to service approximately 300,000 homes.

The CDPA specifies that, in addition to military RDAT&E-related activities, the withdrawn lands are also reserved for use by the Secretary of the Navy for geothermal leasing and development and related power production activities. Section 805 of the CDPA, Management of Withdrawn Lands, specifies that the land withdrawal shall not affect the geothermal exploration and development authority of the Secretary of the Navy under 10 U.S.C. Section 2689, except that the Secretary of the Navy shall obtain the concurrence of the Secretary of the Interior before taking action. Upon the expiration of the withdrawal or relinquishment

of China Lake lands, DoN contracts for the development of geothermal resources at NAWSCL then in effect (as amended or renewed by the DoN after the date of enactment) shall remain in effect provided that the Secretary of the Interior, with the consent of the Secretary of the Navy, may offer to substitute a standard geothermal lease for any such contract.

Deep Rose Geothermal Exploratory Project. The Deep Rose LLC project (non-DoN project) proposes to drill, test, and monitor up to four geothermal exploration wells of depths of up to approximately 18,000 feet in the northwestern portion of the KGRA outside NAWSCL. The overall goals of the project are to explore, locate, and verify the existence of a commercially viable geothermal resource, with the specific goals being to drill into and flow test the geothermal reservoir to confirm its physical characteristics and determine if the resource is commercially viable. The project location is on state-owned lands within Section 16 of T21S R38E MDM, approximately 5 miles (8 kilometers) northeast of the intersection of U.S. Highway 395 and Coso Junction Road (2 miles [3 kilometers] west of NAWSCL). The project would include the construction of a 450- by 650-foot well pad to accommodate an equipment lay-down area, a drilling rig, sump pit, support equipment, water storage tanks, pipe racks, office trailer, and truck turn-around area. Existing roads would need to be upgraded and new roads constructed to a maximum width of 16 feet (5 meters) and up to four turnouts created for vehicle safety. New roads would be constructed where necessary. Water required for well drilling would either be trucked or piped to the project area from a private water source located approximately 5.5 miles (9 kilometers) west of the project site. The source well is located in the Rose Valley Groundwater Basin.

This project is separate from, but totally encompassed by, the lands being considered under BLM's Haiwee Geothermal Leasing Area EIS.

Haiwee Geothermal Leasing Area. BLM is considering geothermal leasing of federally owned geothermal resources in the Haiwee Geothermal Leasing Area (HGLA). These lands encompass most of the northwestern portion of the Coso KGRA east of the Inyo National Forest, west of NAWSCL, and south of the South Haiwee Reservoir. The HGLA consists of an estimated 22,060 acres of BLM-administered public lands that would be considered for competitive geothermal leasing under 43 CFR 3203.10(e). BLM is preparing an EIS to amend the CDCA Plan, to identify as suitable, and allow project area lands to be leased under the authority of the Geothermal Steam Act of 1970, as amended (30 U.S.C. 1001 et seq.). Three noncompetitive lease applications are currently pending with BLM for approximately 4,500 acres of federal mineral estate within the proposed HGLA. The purpose of the Proposed Action is to additionally authorize the three pending noncompetitive lease applications with modification (BLM 2012).

The public lands being considered for geothermal leasing in the HGLA are located in sections 11–14, 23-26, 35, and 36 in Township 21 South, Range 37 East; sections 7–10, 15, 17–22, and 27–34 in Township 21 South, Range 38 East; sections 1, 2, 11, and 12 in Township 22 South, Range 37 East; and sections 5–8 in Township 22 South, Range 38 East, all within the Mount Diablo Meridian.

City of Ridgecrest Projects within the 2010 General Plan. The City of Ridgecrest has direct land use jurisdiction over the incorporated city limits, which encompass about 21.4 square miles. No specific development projects are identified in the City of Ridgecrest General Plan; however, the General Plan is designed to serve as the jurisdiction's "constitution" or "blueprint" for future decisions concerning land use, infrastructure, public services, and resource conservation, and incorporates a Military Sustainability element to reflect the specific needs of the community. This element identifies the goals, policies, and implementation measures needed to ensure the city's dual objective of achieving growth while protecting the flight corridors and military missions associated with NAWSCL. A China Lake Overlay has been defined for the General Plan Land Use Diagram based on noise and safety guidance from the 2007 AICUZ Study and other compatibility factors. Within the China Lake Overlay, land use density/intensity is to remain low and in keeping with the land use compatibility guidance contained in the current AICUZ

Study. The City of Ridgecrest 2010 General Plan Update adopted Military Influence Area designations, based upon recommendations from the 2007 AICUZ Study. Unless already permitted as part of an existing development or approval, only the following land use designations are used on the city's Land Use Diagram: Rural Residential, Low-Intensity Commercial and Industrial (per DoN AICUZ land use compatibility guidelines and Federal Aviation Administration [FAA] Part 77 compliance); Public/Quasi-Public, primarily designed to house infrastructure systems; and Open Space.

Digital 395 Project. The Digital 395 Project involves the placement of approximately 593 miles of middle-mile fiber-optic cable and associated infrastructure to provide broadband service in unserved and underserved areas of the Eastern Sierra. The Digital 395 network would be located between Barstow, California, and Reno, Nevada. The route mainly follows U.S. Highway 58 and U.S. Highway 395, crossing through San Bernardino, Kern, Inyo, and Mono counties in California, and Douglas, Carson City, and Washoe counties in Nevada. The service area contains 36 communities, seven Native American reservations, and two military installations (NAWSCL and the United States Marine Corps Mountain Warfare Training Center). The purpose of the Digital 395 Project is to improve local internet services, provide diverse routing between Northern and Southern California and Southern Nevada, and enhance public safety. The Proposed Action involves the placement of underground fiber-optic cables within the California Department of Transportation (Caltrans) right-of-way/easements, county-maintained dirt roads, Los Angeles Department of Water and Power right-of-way/easements, or Nevada Department of Transportation right-of-way/easements. Installation of underground fiber-optic cables would also occur on NAWSCL (connecting to Michelson Laboratory and on-installation schools) and the United States Marine Corps Mountain Warfare Training Center that connect to the Digital 395 system. Buildings to be constructed would be proposed within existing land use types zoned for utilities. The Digital 395 Project would not change any land use or zoning types (Chambers Group 2011). Construction was initiated in 2012.

NAWSCL Solar Energy Project. A 13.8-MW solar photovoltaic power system was constructed and went into operation in 2012 on a 118-acre (48 hectares) parcel at NAWSCL. The project site is within Mainsite east of Burroughs High School. The solar project consists of 31,680 high-efficiency solar panels and is expected to supply 30 percent of the Installation's energy needs through a power purchase agreement (PPA). The PPA allows the DoN to buy electricity at a discount from retail utility rates and reduce its costs by an estimated $13 million over the next 20 years. The solar project is the largest in the DoN and will help the service achieve its goal of obtaining 50 percent of its shore-based energy requirements from alternative sources by 2020.

NAWSCL Middle School Construction. A new Middle School (Murray Middle School) is proposed to be constructed on a 47.96-acre (19.4 hectares) parcel on the southern portion of the North Range, west of Burroughs High School. The Sierra Sands Unified School District would lease the land for the construction of a new school in association with the Office of Economic Adjustment's Public Schools on Military Installations funding. Construction commenced in 2014 and would be completed within a 2-year period. Facilities to be constructed would include classroom buildings, athletic facilities, and parking areas. Utilities to the new school would use existing connection points identified by the utility companies. The new school would be on DoN property; however, the fence line would be realigned so that the school is outside the Installation perimeter fence. The existing on-installation middle school (near the intersection of Inyokern Road and Richmond Road) would be demolished after the new school is constructed.

NAWSCL New Training Area. A new training development is proposed at NAWSCL to establish remote EOD training areas outside of Darwin Wash (i.e., the establishment of training corridors/use areas in the Lower Centennial and Coso Peak areas), with an expanded training scope of activities.

Zeolite Mine. The International Zeolite Group, Inc., is planning to establish an open-pit zeolite mine on BLM land approximately 7 miles west of Death Valley Junction and 3 miles southwest of State Route 190 (approximately 40 miles northeast of the South Range). The mine and associated staging area would encompass approximately 53 acres (over a 20-year period) with a maximum depth of 50 feet.

Indian Wells Valley Agricultural Development. Several agricultural interests are currently developing lands located within 6 miles of the southwestern and western portions of the NAWSCL North Range. At this time, approximately 2,900 acres of land have been cleared of vegetation with approximately 1,500 acres of that land planted with pistachio trees or alfalfa. An acre of pistachio trees consumes approximately 3 feet of water per year while alfalfa consumes 6 to 8 feet of water per acre. It is anticipated that the recent agriculture operations will use an additional 6,000 acre-feet of water (325,581 gallons/acre-foot) to irrigate these crops. In 2012, the total groundwater production in the Valley was estimated at 27,000 acre-feet with approximately 45 percent going toward agriculture irrigation. To date, eight large-diameter (approximately 18-inches in diameter) groundwater production wells have been drilled to irrigate this acreage. Currently, it is unknown whether additional agricultural development will occur in excess of the currently developed land. Existing use of the groundwater resources in this area includes the DoN, Inyokern Community Services District, Indian Wells Valley Water District, and hundreds of domestic well-owners.

Military Land Withdrawals. As directed by various legislation, branches of the DoD have or are currently evaluating their need and impacts of land withdrawal actions at various military ranges. These include the following:

- Chocolate Mountain Aerial Gunnery Range is in Riverside and Imperial counties in Southern California, approximately 175 miles southeast of NAWSCL. The land withdrawal renewal is for approximately 459,000 acres. The FY 2014 NDAA was signed into law by the President on December 26, 2013 authorizing the land withdrawal renewal.

- Fort Irwin National Training Center is in San Bernardino County and adjacent to the NAWSCL South Range. In 2001, 110,000 acres of public land were withdrawn to support expansion of the Installation.

- Marine Corps Air Ground Combat Center, Twenty-nine Palms is in San Bernardino County approximately 75 miles southeast of NAWSCL. The FY 2014 NDAA was signed into law by the President on December 26, 2013 authorizing the land withdrawal and transfer of administrative jurisdiction to support expansion of the Installation.

- Nellis Air Force Range is in Nye, Clark, and Lincoln counties, Nevada approximately 75 miles northeast of NAWSCL. In 2001, approximately 3 million acres of public land were withdrawn in support of continued mission needs.

Other military land withdrawal renewal activities were not included in the analysis of cumulative impacts since the region of influence would be distant from NAWSCL.

2.5 COMPARISON OF ALTERNATIVES

Table 2-2 provides a comparison of the RDAT&E and training elements included in each of the alternatives. A summary comparison of the potential environmental impacts, along with any potential mitigation measures and impact avoidance and minimization measures for each of the alternatives, is presented in Table 2-3. Mitigation measures are those measures that have generally been developed as part of or in conjunction with the proposed action, and which reduce or avoid significant or potentially

significant environmental impacts. Impact avoidance and minimization measures have not been developed specifically for purposes of the proposed action, and instead generally represent best management practices or standard operating procedures, or compliance with either generally-applicable legal requirements or permits not associated directly with the proposed action. Impact avoidance and minimization measures for NAWSCL are applied on a discretionary, non-interference basis when operations personnel determine that a conservation measure that avoids or minimizes a potential effect can be applied in a mission compatible manner. Impact avoidance and minimization measures generally include actions that voluntarily avoid a potential impact in an operating area or provide an opportunity to remove a potential impact (e.g., removal of a special status species from an area to a similar habitat in a mission compatible location). Potential impacts to the environment are discussed in detail in Chapter 4.

Table 2-2
Comparison of RDAT&E and Training Events for the Alternatives
(Page 1 of 6)

Military Uses			
Activity	**Proposed Action (Alternative 1)**	**Baseline Alternative/Updated No Action Alternative (Alternative 2)**	**No Action Alternative (Alternative 3)**
Range Flight Events (flight hours)	Subsonic events would increase by up to 25 percent. Flight events would increase by approximately 1,438 additional flight hours to 7,188 annual flight hours. Supersonic flight events would increase to approximately 125 events per year.	Continue current level of test and training events at 5,750 flight hours per year. Continue current level of supersonic flight events at 100 events per year.	The discussion of annual RDAT&E and training events for the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
Airfield Flight Events (take-offs and landings)	Flight events from Armitage Airfield would increase by up to 25 percent. Use would increase by approximately 4,553 additional flight events to 22,763 annual flight events.	Continue current level of flight events from Armitage Airfield with 18,210 annual flight events.	
Aircraft Flights (sorties)	Aircraft flights would increase by up to 25 percent: North Range 4,794 Echo Range 3,549 Superior Valley 3,944 TOTAL 12,287	Continue current level of aircraft flights: North Range 3,835 Echo Range 2,839 Superior Valley 3,155 TOTAL 9,829	
Unmanned Aerial System (UAS) Flights (flight hours)	Increase of UAS flight hours: Group 1 (0–20 pounds) 156 Group 2 (21–55 pounds) 1,600 Group 3 (<1,320 pounds) 3,000 Group 4 and 5 (>1,320 pounds) 4,000 TOTAL 8,756	Continue current level of UAS flight hours: Group 1 (0–20 pounds) 16 Group 2 (21–55 pounds) 42 Group 3 (<1,320 pounds) 29 Group 4 and 5 (>1,320 pounds) 1,500 TOTAL 1,587	

Table 2-2
Comparison of RDAT&E and Training Events for the Alternatives
(Page 2 of 6)

Military Uses			
Activity	**Proposed Action (Alternative 1)**	**Baseline Alternative/Updated No Action Alternative (Alternative 2)**	**No Action Alternative (Alternative 3)**
Directed Energy Events (test days)	Increase of directed energy events: HEL Weapons testing 115 HPM Weapons testing 115 TOTAL 230	Continue current level of directed energy events: HEL Weapons Testing 50 HPM Weapons Testing 50 TOTAL 100	
Range Ground Events	Continue use of existing authorized target and test sites on the North and South Ranges.	Continue use of existing authorized target and test sites on the North and South Ranges.	The discussion of annual RDAT&E and training events for the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
Unmanned Ground System (UGS) (test hours)	Increase of UGS activities: Group 1 (0–5,000 pounds) 1,144 Group 2 (5,000–15,000 pounds) 728 Group 3 (>15,000 pounds) 312 TOTAL 2,184	Continue current level of UGS activities: Group 1 (0–5,000 pounds) 364 Group 2 (5,000–15,000 pounds) 234 Group 3 (>15,000 pounds) 96 TOTAL 694	

Table 2-2
Comparison of RDAT&E and Training Events for the Alternatives
(Page 3 of 6)

Military Uses			
Activity	**Proposed Action (Alternative 1)**	**Baseline Alternative/Updated No Action Alternative (Alternative 2)**	**No Action Alternative (Alternative 3)**
Energetics	Energetic Tests Insensitive Munitions 219 Propulsion 56 Air Breathing Engine/Material Evaluation 44 Warhead 176 Weapon Survivability Laboratory (test series) 38 EOD Land Demolition 194 TOTAL 727 CIED Tests (test events) 2,094 EOD Training – Darwin Wash (classes) 38 Test Track (test events) SNORT 30 G-4 7 TOTAL 37	Energetic Tests Insensitive Munitions 175 Propulsion 45 Air Breathing Engine/Material Evaluation 35 Warhead 141 Weapon Survivability Laboratory (test series) 30 EOD Land Demolition 155 TOTAL 581 CIED Tests (test events) 1,675 EOD Training – Darwin Wash (classes) 30 Test Track (test events) SNORT 15 G-4 3 TOTAL 18	
Mobile Targets	Increase of mobile target use: Aerial Targets 35 Vehicular Land Targets 451 TOTAL 486	Continue current level of mobile target use: Aerial Targets 25 Vehicular Land Targets 361 TOTAL 386	The discussion of annual RDAT&E and training events for the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).

Table 2-2
Comparison of RDAT&E and Training Events for the Alternatives
(Page 4 of 6)

Military Uses			
Activity	**Proposed Action (Alternative 1)**	**Baseline Alternative/Updated No Action Alternative (Alternative 2)**	**No Action Alternative (Alternative 3)**
Ground Troop Training (GTT) (training events)	Continue current GTT activities, plus increase the tempo of GTT training events in established areas: Small Group as needed Large Group 53	Continue current patterns of GTT events at existing areas: Small Group as needed Large Group 42	
Munitions Expenditures	Munitions expenditures would increase by up to 25 percent: Bombs North Range 514 Echo Range 816 Superior Valley 13,080 TOTAL 14,410 Gun Munitions North Range 23,354 Echo Range 5,280 Superior Valley 93,725 Darwin Wash 3,292,800 TOTAL 3,415,159 Rockets North Range 458 Superior Valley 428 TOTAL 886	Continue current level of munitions expenditures: Bombs North Range 411 Echo Range 653 Superior Valley 10,464 TOTAL 11,528 Gun Munitions North Range 18,683 Echo Range 4,224 Superior Valley 74,980 Darwin Wash 2,634,240 TOTAL 2,732,127 Rockets North Range 366 Superior Valley 342 TOTAL 708	

Table 2-2
Comparison of RDAT&E and Training Events for the Alternatives
(Page 5 of 6)

Military Uses							
Activity	**Proposed Action (Alternative 1)**		**Baseline Alternative/Updated No Action Alternative (Alternative 2)**		**No Action Alternative (Alternative 3)**
	Missiles		Missiles		The discussion of annual RDAT&E and training events for the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
	North Range	136	North Range	109	
	Other (flares, chaff, etc.)		Other (flares, chaff, etc.)		
	North Range	2,850	North Range	2,280	
	Echo Range	93	Echo Range	74	
	Superior Valley	155	Superior Valley	124	
	TOTAL	3,098	TOTAL	2,478	
Energetic Material Expenditures	Energetic material expenditures would increase by up to 25 percent on the North Range; expenditure of energetic material on the South Range would not occur:		Continue current level of energetic material expenditures on the North Range; expenditure of energetic material on the South Range would not occur:		
	C-4 (pounds)	1,369	C-4 (pounds)	1,095	
	Detasheet 0.125	350	Detasheet 0.125	280	
	Detonation Cord (feet)	15,118	Detonation Cord (feet)	12,094	
	Dynamite	140	Dynamite	112	
	Exrod	70	Exrod	56	
	Gun Powder (pounds)	6,151	Gun Powder (pounds)	4,889	
	High Explosives (pounds)	27,891	High Explosives (pounds)	22,313	
	Satchel Charge C-4	105	Satchel Charge C-4	84	
	Smoke Grenades	140	Smoke Grenades	112	
	Squibs/Initiators (pounds)	402	Squibs/Initiators (pounds)	318	
	TNT (pounds)	41,390	TNT (pounds)	33,112	
	Propellants (pounds NEW*)	789,061	Propellants (pounds NEW*)	631,249	

Table 2-2
Comparison of RDAT&E and Training Events for the Alternatives
(Page 6 of 6)

Nonmilitary Uses		
Activity	**Proposed Action (Alternative 1) and Baseline Alternative/Updated No Action Alternative (Alternative 2)**	**No Action Alternative (Alternative 3)**
Native American Uses	Continue access to Coso Hot Springs and Prayer Site per Memorandum of Agreement. Consider other access on a case-by-case-basis. Access to other areas of the Installation granted dependent upon scheduling and safety concerns.	The discussion of annual RDAT&E and training events for the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
Geothermal Production	Geothermal use would continue at the four power plants in the Coso Known Geothermal Resource Area.	
Research and Education	Continue DoN sponsorship of research projects and consideration of externally directed research on a case-by-case basis.	
Recreation		
Camping	Allow camping on a case-by-case basis.	
Golf and Gym	Keep golf course and gymnasium open to the public.	
Hiking	Consider on-installation hikes on a case-by-case basis.	
Equestrian	Allow access at a specified area on G-Range Approach Corridor on a case-by-case basis.	
Off-Road Vehicle	Permit off-road vehicle to cross Randsburg Wash Access Road during public events sponsored by BLM.	
Petroglyph Tours	Allow petroglyph tours to the extent practicable in accordance with the NAWSCL Public Access Policy.	
Bird Watching	Allow Audubon Society annual bird counts.	
Photography	Allow photography on a case-by-case basis.	

*NEW – net explosive weight
Sources: U.S. Navy 2004a; NAWCWD 2011.

Table 2-3
Summary of Influencing Factors and Environmental Impacts
(Page 1 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Land Use	Impacts • Off-installation noise effects from aircraft flight events would continue to exceed noise compatibility thresholds at certain noise-sensitive receptors with significant land use impacts. • Land use on NAWSCL would be managed in accordance with the Installation CLUMP that accounts for proposed increases in mission activities. • Use of the Installation property would be compatible with adjacent land uses.	Impacts • Off-installation noise effects from aircraft flight events would continue to exceed noise compatibility thresholds at certain noise-sensitive receptors with significant land use impacts. • Land use on NAWSCL would continue to be managed in accordance with the Installation CLUMP. • Use of the Installation property would not change and would be compatible with adjacent land uses.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
	Mitigation Measures • None.	Mitigation Measures • None.	
	Impact Avoidance and Minimization Measures • Compliance with the land use management recommendations of the 2011 AICUZ Update.	Impact Avoidance and Minimization Measures • Compliance with the land use management recommendations of the 2011 AICUZ Update.	

Table 2-3
Summary of Influencing Factors and Environmental Impacts
(Page 2 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Noise	Impacts • Existing aircraft noise from ongoing aircraft flight operations at Armitage Field is a significant land use compatibility impact around NAWSCL. Off-installation noise effects from aircraft flight operations under the Proposed Action would continue to exceed noise compatibility thresholds at certain noise-sensitive receptors in the communities of China Lake Acres and Ridgecrest. The overall aircraft noise impacts would remain significant. The noise contour from munitions expenditures would be marginally larger; however, the difference would be negligible. • Existing nonmilitary uses at NAWSCL would produce a negligible amount of noise.	Impacts • No change would occur in noise conditions around NAWSCL. • Off-installation noise effects from aircraft flight operations would continue to exceed noise compatibility thresholds at certain noise-sensitive receptors and would continue to be a significant noise impact.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
	Mitigation Measures • Continue implementation of the NAWSCL air operations noise abatement and aircrew education programs to minimize noise impacts on- and off-installation.	Mitigation Measures • Continue implementation of the NAWSCL air operations noise abatement and aircrew education programs to minimize noise impacts on- and off-installation.	
	Impact Avoidance and Minimization Measures • Compliance with the land use management recommendations of the 2011 AICUZ Update. • Maintain and enhance NAWSCL community information programs and AICUZ Program outreach efforts. • Continue the NAWSCL noise complaint response program.	Impact Avoidance and Minimization Measures • Compliance with the land use management recommendations of the 2011 AICUZ Update. • Maintain and enhance NAWSCL community information programs and AICUZ Program outreach efforts. • Continue the NAWSCL noise complaint response program.	

Table 2-3
Summary of Influencing Factors and Environmental Impacts
(Page 3 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Air Quality	Impacts • Increased aircraft operations would result in an increase in air emissions. The increased emissions would be well below *de minimis* levels and the General Conformity Rule would not be applicable. Net increases of emissions would be below the Prevention of Significant Deterioration program levels and General Conformity Rule *de minimis* values and would be less than significant. • Activities associated with ground-based activities (e.g., GTT, test and target setup/tear down) would result in short-term air quality impacts. • Emissions associated with the Proposed Action would not hinder maintenance of the NAAQS or CAAQS.	Impacts • No change would occur in air quality conditions. • Emissions associated with the Baseline Alternative/Updated No Action Alternative would not hinder maintenance of the NAAQS or CAAQS.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
	Mitigation Measures • Implement dust control measures during construction.	Mitigation Measures • Implement dust control measures during construction.	
	Impact Avoidance and Minimization Measures • None.	Impact Avoidance and Minimization Measures • None.	
Biological Resources (continued)	Impacts • Potentially significant impacts to desert tortoises associated with wildland range fires. • Continuation of current management practices with respect to wild horses and burros would have a positive effect on the respective herds as well as natural resources generally. The management guidance set forth in the updated INRMP (and Wild Horse and Burro Management Program) would enhance these positive effects. • Potentially significant impacts associated with the increased use of hot spotting charges in order to optimize safety, and to facilitate the tracking and retrieval of munitions.	Impacts • Potential impacts to biological resources would be similar to those described under the Proposed Action.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).

Table 2-3
Summary of Influencing Factors and Environmental Impacts
(Page 4 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Biological Resources (continued)	• Potentially significant impact associated with the removal of fire-fighting personnel from the South Range, increasing the fire response time.		
	Mitigation Measures • Continue the control of wild horses and feral burro populations on NAWSCL. • Continue the control of invasive species to reduce degradation of plant and wildlife habitats, and to reduce the frequency of wild fires on NAWSCL. • Implement provisions stipulated in the most current and applicable BOs (see discussion of BOs in Section 3.4.3.1 and desert tortoise BO in Appendix J). • Implement provisions of the approved INRMP and successor documents.	Mitigation Measures • Mitigation measures would be similar to those described under the Proposed Action.	
	Impact Avoidance and Minimization Measures • Continue to conduct focused plant and animal species surveys across the entirety of NAWSCL. Compile these biological data into GIS to document current distribution and density of the NAWSCL federally listed and special status species. • Compilation of these data would establish resource baselines and allow natural resources managers to monitor and detect when a particular special status species, or its habitat, may be in decline. If a decline in overall species numbers is detected, or if there is a reduction in habitat quality and area, then additional and focused management steps would be implemented to curtail and reduce future impacts on those particular species or habitats.	Impact Avoidance and Minimization Measures • Impact avoidance and minimization measures would be similar to those described under the Proposed Action.	

Table 2-3
Summary of Influencing Factors and Environmental Impacts
(Page 5 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Biological Resources (continued)	• Compilation of an integrated natural resources database also facilitates project planning and approval processes in support of current and evolving mission requirements. • Continue avian surveys and monitoring in accordance with applicable requirements (e.g., MBTA [and Military Readiness Rule], Bald and Golden Eagle Protection Act, etc.) and management plans (e.g., INRMP and CLUMP) in areas that provide suitable perching and nesting habitat for federally protected bird species that have the potential to be adversely affected by activities conducted at NAWSCL. • For instances where a federally protected avian species may be at risk from a planned activity, project personnel and EMD would work cooperatively to implement appropriate impact avoidance and minimization measures as operational conditions permit. • Continue the effective application of project and activity review and approval processes (NAWSCL NEPA Instruction and NAWSCL Site Approval Process) and promote the adaptive reuse of existing operational assets to minimize potential effects to biological resources and the need for new project construction. • Increase the level of decision quality information available for use in project planning processes to support mission compatible avoidance or minimization measures and achieving natural resources management goals and objectives. Information collected and catalogued on natural resources would be coordinated with applicable stakeholders. Surveys and monitoring would continue to be conducted on a non-interference basis with military operations.		

Table 2-3
Summary of Influencing Factors and Environmental Impacts
(Page 6 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Biological Resources (continued)	• Continue to evaluate and enhance fire management measures on NAWSCL, particularly for areas where wild fires have historically been difficult to control. • Conduct post-event biological surveys in accordance with the 2013 BO to assess the potential effect to natural resources from military activities when fires leave the target area and enter adjoining critical habitat and document the date, time, location, cause, and acreage of the fire. Fires would be mapped using GPS and plotted in GIS. • In desert tortoise habitat, post-fire surveys would include focused surveys to determine whether any desert tortoises have been injured or killed. The DoN would conduct the surveys in accordance with the desert tortoise pre-project survey guidelines (http://www.fws.gov/ventura/species_information/protocols_guidelines/index.html) and include the results in its annual report to USFWS. An authorized biologist would lead the surveys. • Post-fire surveys would be limited to an annual cumulative acreage of 2,000 acres (1,000 acres in desert tortoise critical habitat and 1,000 acres outside of desert tortoise critical habitat). The 2,000-acre limit is due to the practicality and logistical feasibility of conducting timely surveys over an area larger than 1,000 acres in both areas. In the instance of an unforeseen fire that exceeds this acreage, the DoN would consult with USFWS as soon as possible.		

Table 2-3
Summary of Influencing Factors and Environmental Impacts
(Page 7 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Cultural Resources	Impacts • Potential impacts to cultural resources from increased aircraft operations would be reduced to less than significant by implementation of mitigation measures and impact avoidance and minimization measures. • The proposed increase in the level of use of test areas and targets would potentially result in an increase in disturbance to cultural resources. • Potential impacts to cultural resources from increased ground activities and target and test site use would be reduced to less than significant by implementation of mitigation measures and impact avoidance and minimization measures. • Tribes have visited the Coso Hot Springs Traditional Cultural Property (TCP) before geothermal production began in the Coso Geothermal LMU. No changes are proposed to geothermal plant operations and the conditions of the Hot Springs (temperature and water levels) have been relatively stable since 2002, with average temperature declining appreciably subsequent to 1993. The Proposed Action would have no adverse effects on historic properties, and there would be no significant impacts to cultural resources. • Nonmilitary recreational activities would not change and would not impact cultural resources. • Implementation of the CLUMP would be a beneficial impact to cultural resources at NAWSCL. Mitigation Measures • Environmental awareness briefings would be required for military, civilian, and contractor personnel.	Impacts • Potential impacts to cultural resources would be similar to those described under the Proposed Action.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).

Table 2-3
Summary of Influencing Factors and Environmental Impacts
(Page 8 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Cultural Resources (continued)	• Vehicle traffic would be limited to roads (in accordance with Ranges Road Usage Direction), test and target areas, and existing instrumentation sites.	Mitigation Measures • Mitigation measures would be similar to those described under the Proposed Action.	
	Impact Avoidance and Minimization Measures • Undeveloped areas, if previously unevaluated, would undergo review through the Installation's existing environmental review process presented in the ICRMP prior to use. Compliance with the ICRMP. • Internal discussions between the EMD and program manager during the planning process to reduce impacts to cultural resources through avoidance strategies or project alteration. • Completion of environmental studies around targets and test sites to make informed avoidance decisions. • Consultation between the DoN, federal and state regulatory agencies, Tribes, and interested parties to resolve potential adverse effects to historic properties. • Development and implementation of appropriate treatment plans for cultural resources determined to be National Register-eligible in accordance with the ICRMP, including data recovery fieldwork, data analysis, and consultation, would occur. • Development and implementation of appropriate treatment plans for paleontological resources consistent with professional standards, protocols, and measures established by professional organizations and agencies including the SVP as discussed in the ICRMP, and the BLM.	Impact Avoidance and Minimization Measures • Impact avoidance and minimization measures would be similar to those described under the Proposed Action.	

Table 2-3
Summary of Influencing Factors and Environmental Impacts
(Page 9 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Cultural Resources (continued)	In the event that human remains are found, the following would occur: • Suspension of ground-disturbing activities in the affected area, preservation in place and avoidance of human remains and associated funerary or sacred objects, and notification of NAWSCL. • NAWSCL would initiate consultation with the appropriate state and federal agencies and federally recognized tribes in accordance with established NAGPRA procedures, including a 30-day cessation of work in the affected area; creation of a Plan of Action and appropriate consultation may prevent 30-day work stoppages (43 CFR 10). • Continued Environmental Awareness briefings would be conducted for personnel operating in GTT areas. • Off-road vehicle use and any ground-disturbing activities is prohibited. • Small group GTT locations over land would be intentionally varied in order to reduce the possibility of the formation or marking of trails by ground troops. Only pedestrian traffic, including pack animals and working dogs, is approved for off-road travel. • Larger group GTT activities would occur on existing travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, and instrumentation sites. These activities would not include any new surface disturbances.		•

Table 2-3
Summary of Influencing Factors and Environmental Impacts
(Page 10 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Geology and Soils	Impacts • Increased use of target and test sites is not expected to result in a substantial change to soil characteristics. • Due to the relatively low intensity of use and limitation of activities to previously disturbed areas, potential impacts to soil resources due to increased ground events would be less than significant. • Nonmilitary uses would not change from current conditions; no impact would occur to geology and soils. • Implementation of the CLUMP would serve to minimize and mitigate potential impacts to geology and soils, representing a beneficial impact.	Impacts • Continued use of target and test sites is not expected to result in a substantial change to soil characteristics. • Due to the relatively low intensity of use and limitation of activities to previously disturbed areas, potential impacts to soil resources due to ground events would be less than significant. • Nonmilitary uses would continue at current levels; no impact to geology and soils would occur. • Implementation of the CLUMP would serve to minimize and mitigate potential impacts to geology and soils, representing a beneficial impact.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
	Mitigation Measures • None.	Mitigation Measures • None.	
	Impact Avoidance and Minimization Measures • None.	Impact Avoidance and Minimization Measures • None.	
Water Resources	Impacts • With limited employment increase at NAWSCL, increased RDAT&E and training events would not be anticipated to result in a significant increase in water use. • Since activities do not take place in proximity to surface water resources, the proposed increased use of munitions at existing target and test sites would not affect surface water quality or supply and would not be significant. • Implementing the CLUMP would enhance the conservation and protection of NAWSCL surface water resources, and would incorporate the management actions defined in the existing cooperative groundwater management agreement between the Installation and other participating water purveyors.	Impacts • Potential impacts to water resources would be similar to those described under the Proposed Action.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).

Table 2-3
Summary of Influencing Factors and Environmental Impacts
(Page 11 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Water Resources (continued)	Mitigation Measures • None.	Mitigation Measures • None.	

	Impact Avoidance and Minimization Measures
	• NAWSCL would continue proactive water conservation practices of replacing turf and other high water-use vegetation with xeriscaped landscapes, repairing leaking pipes, re-lining water storage reservoirs, reducing distribution line flushing from hydrants and valves during drought, and installation of dual flush toilets and low-flow shower heads/faucets. Further, NAWSCL would also continue to:
	  • Limit and monitor additional large-scale pumping in areas designated in the IWV Cooperative Groundwater Management Plan.
	  • Distribute new groundwater production in a manner that minimizes adverse effects on existing use patterns.
	  • Advocate the use of treated water; reclaimed water; and recycled, gray, and lower-quality waters for appropriate applications.
	  • Explore the utility of other groundwater management methods, such as water transfer, banking, imports, and replenishment. Continue cooperative groundwater data-acquisition and coordination efforts.
	  • Explore potential for improvements to cooperative management framework.
		Impact Avoidance and Minimization Measures
		• Impact avoidance and minimization measures would be similar to those described under the Proposed Action.	

Table 2-3
Summary of Influencing Factors and Environmental Impacts
(Page 12 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Socioeconomics and Environmental Justice	Impacts • Personnel levels would remain stable. • No impact to socioeconomics linked to Installation activity would occur, including the employment rate or demand for housing and schools. • A beneficial impact would occur to the local economy due to a slight increase in local expenditures. • Nonmilitary uses would not change from current conditions; no impact on socioeconomics would occur. • Implementation of the CLUMP would have no impact on socioeconomics. • Implementation of this alternative would not result in disproportionately high and adverse human health or environmental effects on minority or low-income populations nor would it result in environmental health risks and safety risks that may disproportionately affect children.	Impacts • Potential impacts to socioeconomics would be similar to those described under the Proposed Action.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
	Mitigation Measures • None.	Mitigation Measures • None.	
	Impact Avoidance and Minimization Measures • None.	Impact Avoidance and Minimization Measures • None.	

Table 2-3
Summary of Influencing Factors and Environmental Impacts
(Page 13 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Utilities and Public Services	Impacts • Demand placed on utilities and public services would not exceed existing capacities. • Nonmilitary uses would not place additional demand on utilities or public services. • Implementation of the CLUMP would serve to facilitate improved planning and decision-making, representing a beneficial impact.	Impacts • Potential impacts to utilities and public services would remain unchanged from baseline conditions and would not be significant.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
	Mitigation Measures • None.	Mitigation Measures • None.	
	Impact Avoidance and Minimization Measures • None.	Impact Avoidance and Minimization Measures • None.	
Public Health and Safety	Impacts • Range activities would continue to be conducted in accordance with established safety policies and procedures. • The DoN would implement additional safety measures (as appropriate) for new or developing systems to ensure the safety of the public and military personnel. • Safety hazard areas would be established prior to initiating new or developing an existing system. • Continued nonmilitary uses would not result in additional public health and safety concerns. • Implementation of the CLUMP would serve to facilitate improved planning and decision-making, representing a beneficial impact.	Impacts • Range activities would continue to be conducted in accordance with established safety policies and procedures. • Public health and safety concerns would not change from current conditions. • Continued nonmilitary uses would not result in additional public health and safety concerns. • Implementation of the CLUMP would serve to facilitate improved planning and decision-making, representing a beneficial impact.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).

Table 2-3
Summary of Influencing Factors and Environmental Impacts
(Page 14 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Public Health and Safety (continued)	Mitigation Measures • None.	Mitigation Measures • None.	
	Impact Avoidance and Minimization Measures • Access control would continue through the use of existing systems, including badging authorized personnel, perimeter fencing, roadblocks, barricades, locked gates, and guard posts. • Test and training activities would be conducted in accordance with established safety policies and procedures. • Current range and airspace safety procedures would continue to be implemented. • Civilian and commercial aircraft would continue to be restricted from the airspace over the ranges when they are being used for military activities. • Implementation of the existing BASH program would continue to keep pilots advised of bird movements to minimize the potential for bird strikes. • RF-emitting devices would be limited to PELs for controlled environments and would follow approved SOPs. • Safety exclusion zones would be established and clearly delineated. • Laser activities would be managed in accordance with appropriate range safety regulations and approved SOPs.	Impact Avoidance and Minimization Measures • Impact avoidance and minimization measures would be similar to those described under the Proposed Action.	

Table 2-3
Summary of Influencing Factors and Environmental Impacts
(Page 15 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Public Health and Safety (continued)	• Backdrops, buffer zones, beam path restrictors, and administrative controls would be in place during ground-based laser activities. • Non-essential personnel would be evacuated from the area prior to initiating tests. • Continue policy of clearing UXO and removing MPPEH from the ranges after tests are conducted as conditions allow.		
Hazardous Materials/ Hazardous Waste Management	Impacts • Current management practices would remain in place, and the volume of materials and wastes managed is expected to increase by up to 25 percent. • Hazardous materials storage/usage would remain within reportable limits, and hazardous waste generation would remain within the Installation's permitted limits. • Installation Restoration sites would continue to be identified, investigated, and remediated, as appropriate. • Implementation of the CLUMP would formalize and integrate the environmental review process that is applied to military and nonmilitary actions using hazardous materials and generating hazardous wastes, representing a beneficial impact.	Impacts • Current management practices would remain in place, and the volume of materials and wastes managed would not increase. • Hazardous materials storage/usage would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits. • Installation Restoration sites would continue to be identified, investigated, and remediated, as appropriate. • Implementation of the CLUMP would formalize and integrate the environmental review process that is applied to military and nonmilitary actions using hazardous materials and generating hazardous wastes, representing a beneficial impact.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
	Mitigation Measures • None.	Mitigation Measures • None.	
	Impact Avoidance and Minimization Measures • None.	Impact Avoidance and Minimization Measures • None.	

Table 2-3
Summary of Influencing Factors and Environmental Impacts
(Page 16 of 16)

Resources	Proposed Action (Alternative 1)	Baseline Alternative/Updated No Action Alternative (Alternative 2)	No Action Alternative (Alternative 3)
Transportation	Impacts • Daily vehicle trips to and from NAWSCL would not change; however, periodic increases for increased GTT events would occur. • LOS of the local road network would continue to operate at acceptable levels. • Two intersections (Sandquist Road/Lauritsen Road and East Inyokern Road/Bullard Road) would continue to operate at unacceptable LOS. • Implementation of the CLUMP would serve to facilitate improved planning and decision-making, representing a beneficial impact.	Impacts • Daily vehicle trips to and from NAWSCL would not change. • LOS of the local road network would not change and would continue to operate at acceptable levels. • Two intersections (Sandquist Road/Lauritsen Road and East Inyokern Road/Bullard Road) would continue to operate at unacceptable LOS. • Implementation of the CLUMP would serve to facilitate improved planning and decision-making, representing a beneficial impact.	Discussion of potential impacts, mitigation measures, and impact avoidance and minimization measures associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed in light of the December 2013 reauthorization of the land withdrawal for NAWSCL (please see discussion in Section 2.3.3).
	Mitigation Measures • None.	Mitigation Measures • None.	
	Impact Avoidance and Minimization Measures • None.	Impact Avoidance and Minimization Measures • None.	

AICUZ = Air Installation Compatible Use Zone
BASH = Bird Aircraft Strike Hazard
BLM = Bureau of Land Management
BMP = best management practice
BO = Biological Opinion
CA SHPO = California State Historic Preservation Officer
CAAQS = California Ambient Air Quality Standards
CFR = Code of Federal Regulations
CLUMP = Comprehensive Land Use Management Plan
CRPM = Cultural Resources Program Manager
EMD = Environmental Management Division
GIS = geographic information system
GPS = global positioning system
GTT = ground troop training
ICRMP = Integrated Cultural Resources Management Plan
IEPM = Installation Environmental Program Manager
LMU = Land Management Unit
LOS = level of service
MBTA = Migratory Bird Treaty Act
MPPEH = material potentially presenting an explosive hazard
NAAQS = National Ambient Air Quality Standards
NAGPRA = Native American Graves Protection and Repatriation
NAWSCL = Naval Air Weapons Station China Lake
NEPA = National Environmental Policy Act
PEL = permissible exposure limit
RDAT&E = Research, Development, Acquisition, Test, and Evaluation
SOP = standard operating procedure
SVP = Society of Vertebrate Paleontology
TCP = Traditional Cultural Property
USFWS = U.S. Fish and Wildlife Service
UXO = unexploded ordnance

This page intentionally left blank.

CHAPTER 3.0
AFFECTED ENVIRONMENT

This chapter describes the existing environmental conditions at NAWSCL. It provides information to serve as a baseline from which to identify and evaluate environmental changes associated with the Proposed Action and alternatives. Based on the activities that would occur under the Proposed Action and alternatives, it was determined that the potential exists for the following resources to be affected or to create environmental effects: land use, noise, air quality, biological resources, cultural resources, geology and soils, water resources, socioeconomics (including environmental justice), utilities and public services, public health and safety, hazardous materials and waste, and traffic and circulation. Visual resources are not addressed in this document since implementation of the Proposed Action or alternatives would not change the visual character of the existing landscape. Minimal construction and/or physical modification to existing structures would occur, and views from scenic viewsheds and roadways would not be altered.

The region of influence (ROI) to be studied will be defined for each resource area affected by the Proposed Action and alternatives. The ROI determines the geographical area to be addressed as the affected environment. Although NAWSCL may constitute the ROI limit for some resources, potential impacts associated with certain issues (e.g., noise, air quality) could cross Installation boundaries.

This page intentionally left blank.

3.1 LAND USE

This section describes existing on-installation and surrounding off-installation land uses at NAWSCL. Land use is defined by the physical activities or designated use occurring within the Installation's boundary, and incorporates the uses related to ongoing military missions and other nonmilitary use of Installation lands. The CDPA of 1994 (16 U.S.C. 410AAA et seq.), which combined all prior public land withdrawal legislative actions relating to NAWSCL into one comprehensive instrument, reauthorized the DoN's continued use of public withdrawn lands for its RDAT&E and training mission, and allows the accommodation of compatible nonmilitary land uses at NAWSCL, subject to the approval of the NAWSCL Commanding Officer. Consistent with the CDPA, the land use section includes separate discussions of military and nonmilitary land use at NAWSCL.

3.1.1 Region of Influence

The ROI for land use includes the lands on and within approximately 5 miles (8 kilometers) of NAWSCL. The ROI was determined to be approximately 5 miles (8 kilometers) based on the physical area that bounds the environmental, sociological, economic, and cultural features of interest for the purpose of analysis. The ROI includes a combination of lands managed by federal, state, and local jurisdictions. Local jurisdictions include unincorporated portions of Inyo, Kern, and San Bernardino counties, as well as Ridgecrest, Inyokern, Trona, and unincorporated communities in the region.

3.1.2 Current Management Framework

Land use planning activities conducted by NAWSCL address proposed land use actions occurring both on- and off-installation. On-installation land use planning efforts involve facility planning for the operation and maintenance of Installation facilities and infrastructure, test planning for range activities, and planning for other nonmilitary activities. Off-installation land use planning focuses on activities with the potential to affect military activities at NAWSCL and is administered by NAWSCL staff through participation with planning staff from various city, county, state, and federal agencies in the region.

Land use activities on-installation are administered according to the environmental review process at NAWSCL. The main framework plans for land use activities are the CLUMP, the INRMP, and the ICRMP.

3.1.2.1 CLUMP

The CLUMP contains land use goals, objectives, planned actions, and procedures for the management of land use associated with the support of military activities and the protection and conservation environmental resources at NAWSCL. It provides a working tool to accommodate changes and updates to meet the current and future land use management needs. The CLUMP Update revises baseline conditions for environmental resources and land use in accordance with the current knowledge of those conditions and other applicable management plans at NAWSCL. These applicable plans include the 2014 INRMP and successor documents; the 2012 ICRMP and PA; the 2011 AICUZ Update; the 2008 NAWSCL Airfield Master Plan; the 2007 NAWSCL Activity Overview Plan; the 2010 NAWSCL Mainsite Master Plan; the 2013 NAWCWD Operational Requirements Document, and other technical directives. The CLUMP integrates environmental resource management, mission planning, facilities planning, and an environmental review process to support land use decision-making. The CLUMP is intended to make the management of land use and environmental resources a more effective and efficient process.

3.1.2.2 INRMP

Although the 2014 INRMP is not part of the Proposed Action (Alternative 1) or alternatives, it is an element of the CLUMP resources management goals and guidelines. INRMP implementation is required by the Sikes Act to carry out a program to provide for the conservation and rehabilitation of natural resources on military installations, sustainable multipurpose uses of resources, and public access for use of natural resources, subject to safety and military security considerations.

3.1.2.3 ICRMP

Similar to the INRMP, the 2012 ICRMP is not part of the Proposed Action (Alternative 1) or alternatives, but is an element of the CLUMP resources management goals and guidelines. The ICRMP provides an overview of the prehistory, history, and identified cultural resources of the Installation. Moreover, the ICRMP identifies processes for the management of cultural resources within specific areas of responsibility at NAWSCL, as it is the Installation's responsibility to consider the effects of its actions in order to avoid, minimize, or mitigate any impact to eligible cultural resources that might occur as a result of its actions.

3.1.2.4 Air Installation Compatible Use Zone Program

DoD established the AICUZ program to address noise, safety, and land use issues associated with aircraft events at military airfields and installations. The purpose of the AICUZ program is to achieve compatibility between military air installations and neighboring communities and protecting the health, safety, and welfare of civilian and military personnel, and protecting the operational capabilities of military air installations. This compatibility is achieved by analyzing the airfield operational footprint and recommending land use in the vicinity of the airfield that is compatible with aircraft events.

An AICUZ Study was developed and implemented at NAWSCL Armitage Airfield in 1977. This plan established operational profiles that minimized noise impacts to neighboring communities, established APZs for airfield events, and accommodated the Installation's needs. The AICUZ Study was updated in 2007 and again in 2011.

Since the 2007 AICUZ Study, NAWSCL conducted several aircraft noise studies to update noise contours around the airfield due to changes in aircraft events. These included a November 2008 noise study, an August 2009 noise study, and an April 2010 noise study, all depicting noise contours around the airfield. NAWSCL completed an AICUZ Update in April 2011 to include findings from the November 2008 and August 2009 noise studies concerning changes to aircraft events. The 2011 AICUZ Update characterizes noise exposure footprints associated with current and projected airfield flight events, identifies APZs, updates land use compatibility guidelines for noise levels, and provides recommendations for land use planning and management for NAWSCL and surrounding communities.

3.1.2.5 Master Plans

The Naval Weapons Center China Lake Activity Overview Plan (July 2007) is one of the supporting elements of the CLUMP. The NAWSCL Airfield Master Plan (2008) and the Mainsite Master Plan (2010) also provide supporting information. The overview plan provides a descriptive account of the Installation's real estate, land uses, facilities, utility and circulation systems, and environmental resources. In addition, the Naval Air Weapons Station China Lake Airfield Master Plan (U.S. Navy 2008b) and the Mainsite Master Plan (U.S. Navy 2010) provides updated information regarding the land uses of the Installation. These master plans address planning and management of the Installation's facilities and infrastructure.

The final CLUMP would serve as an update to the master plans, defining the land use planning and management process.

3.1.2.6 Site Approval and Project Review Process

NAWSCL currently uses an established planning and review approval process for existing host command land uses and operations (NAWSINST 11100.1).

3.1.3 On-Installation Land Ownership

Figures 3.1-1 and 3.1-2 show the land assets within the NAWSCL boundaries for the North Range and South Range, respectively. NAWSCL lands are composed of property owned by the DoN; DoI lands withdrawn from public domain; and lands acquired through lease, easement, or permit for DoN use. The acreage of each category is shown in Table 3.1-1.

Table 3.1-1
Lands Acquired by Lease, Easement, or Permit for DoN Use

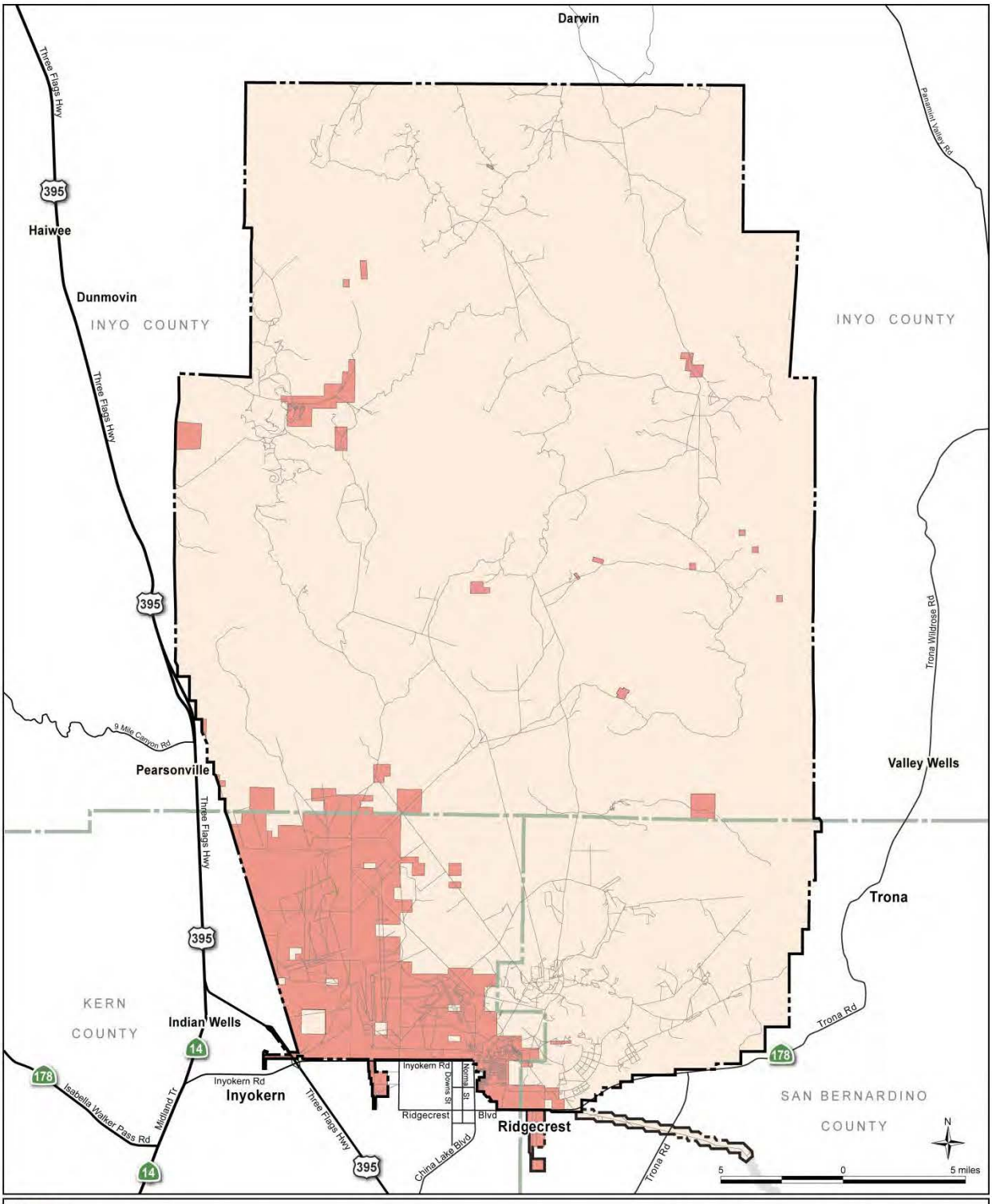
Category	Acres[(a)]
Fee simple (owned by DoN)	61,745
Withdrawn from public domain (expiration September 30, 2014)	1,044,126
License/permit/agreement/easement[(b)]	45,040
Total Land Assets	1,150,911

Notes: (a) Acreage calculations are based on 2013 Cadastral Survey of NAWSCL lands.
(b) The installation has granted 142 easements for access across portions of its land. Easements are granted for a variety of essential uses, ranging from water pipelines and other utilities to the California Department of Transportation (Caltrans) rights-of-way along State Highway 178.
Source: U.S. Navy 2013b.

Range approach corridors, located south of the North Range, were established in the mid-1980s to reduce risk to people and property, and to protect flight activities from encroachment and uses that may adversely affect flight safety. The corridors primarily support aircraft approaches to targets on the George (G Range Approach Corridor) and Baker/Charlie (B/C Range Approach Corridor) ranges. Each corridor minimizes safety risks and noise levels to Ridgecrest residents and NAWSCL personnel that may result from flight events. Lands within the approach corridors have been purchased by the DoN or are managed under agreements (e.g., rights-of-way). Any proposed new land use within these designated areas must be compatible with the existing use as an aircraft approach corridor.

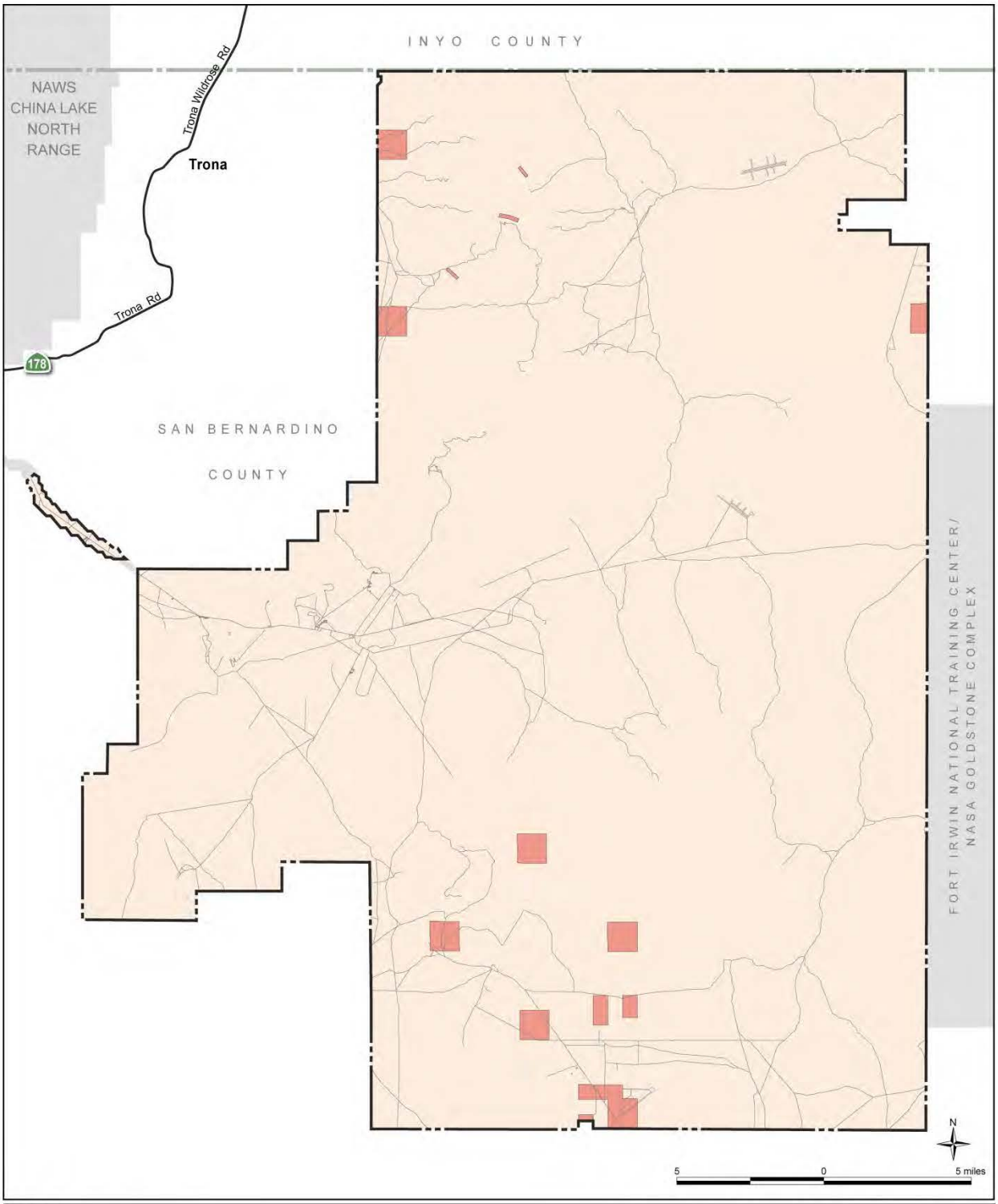
3.1.4 On-Installation Land Use

Land use at NAWSCL includes a variety of military activities throughout the range areas for high-hazard air warfare weapons systems RDAT&E and training events. Other military land use includes airfield events, munitions storage areas, laboratory and industrial areas, administrative and residential areas, and associated facilities and infrastructure. Military activities include air-to-air, air-to-ground, ground-to-air, and ground-to-ground testing and training events. Other test and training capabilities include electronic warfare ranges, gun ranges, a radar cross-section range, high-speed test tracks, parachute testing areas, and munitions test facilities. Aircrew training and GTT activities also occur throughout NAWSCL ranges. R&D activities generally occur within the laboratories located at Mainsite and the China Lake Propulsion Laboratories, while T&E activities typically take place on and over the land ranges. Aircraft



On-Installation Land Ownership
North Range

Figure 3.1-1



On-Installation Land Ownership South Range

Figure 3.1-2

events are staged from Armitage Airfield. Support activities for the maintenance and operation of facilities and infrastructure are conducted throughout NAWSCL-administered lands.

NAWSCL lands have also been used for a variety of nonmilitary uses, including Native American religious and traditional uses; scientific research and educational projects; limited recreation opportunities; and commercial activities such as renewable energy development, utility easements, and grazing.

3.1.5 Land Management Units

Because NAWSCL is approximately 1.1 million acres (445,156 hectares), land areas are divided into smaller units to facilitate mission planning and management. LMUs (except Mainsite, Propulsion Laboratories, Main Magazines, and Armitage Airfield) are defined as operational ranges per DoD Directive 4715.11, *Environmental and Explosives Safety Management on Operational Ranges Within the United States*. Also defined by their principal function and uses, land areas are generally separated into two principal categories: those within the developed portions of the Installation (Mainsite, Armitage Airfield, Main Magazines, and Propulsion Laboratories) and those that comprise the test and training areas of the North and South Ranges (the two main categories are discussed in the sections below). The LMUs are shown in Figures 3.1-3 and 3.1-4, and their principal functions are listed in Table 3.1-2.

3.1.6 Military-Related Land Uses

Land uses within the LMUs are established to support the military activities in each area. These activities fall into one of five categories: R&D, acquisition, T&E, training, or support. Each category is described in the following sections. Figures 2-1 and 2-2 in Chapter 2 show the locations of existing military land uses on NAWSCL North and South Ranges, respectively.

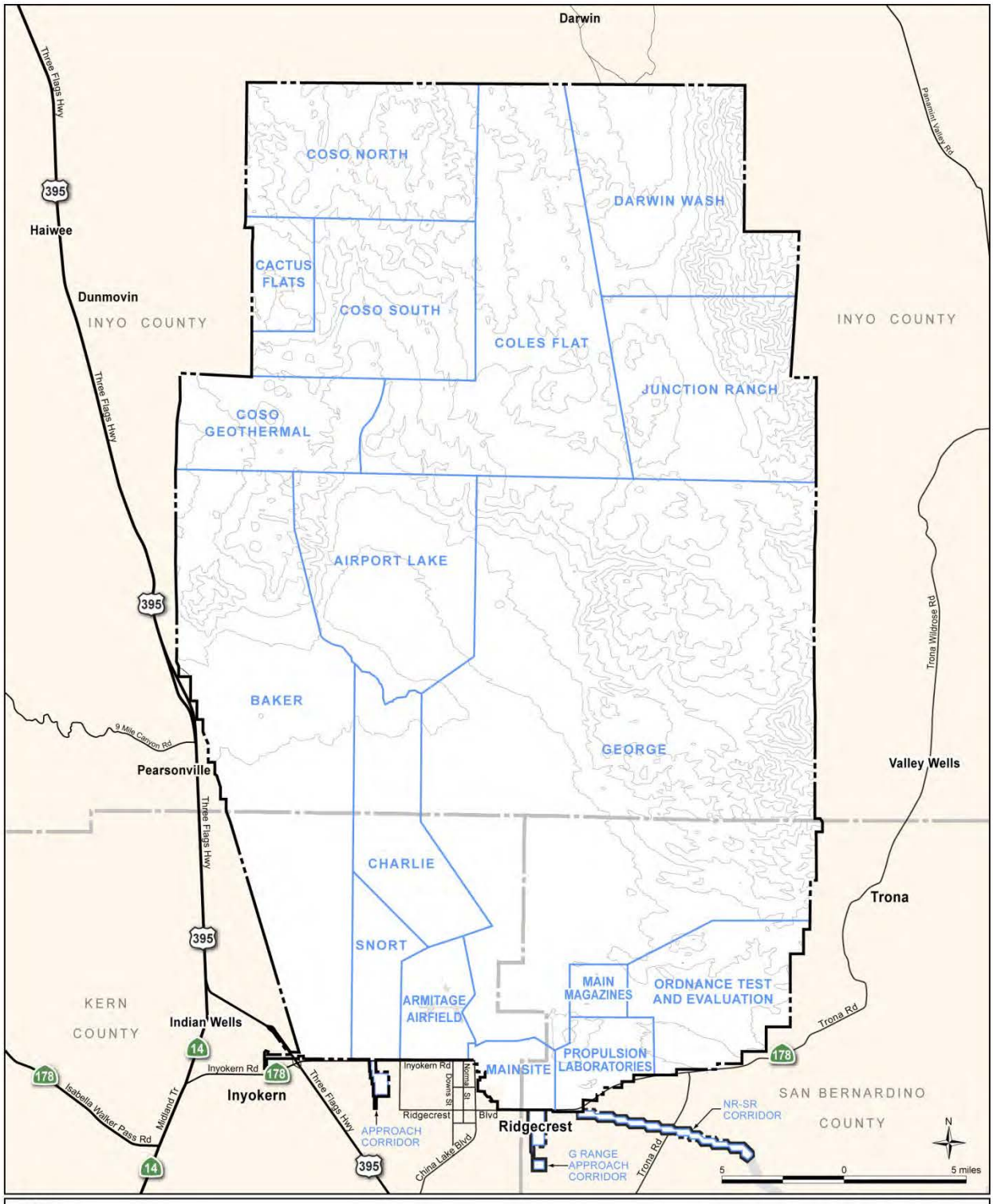
3.1.6.1 Research and Development

Weapons R&D supports all phases of weapon systems development, from the earliest concepts of a weapon to engineering and manufacturing, to fleet use, and finally to the disposal of systems no longer needed by the military. The goal of weapons R&D is to explore promising technology for the fulfillment of the war-fighter's needs.

At NAWSCL, research activities focus on weapons guidance and control, warheads, explosives, propellants, pyrotechnics, propulsion systems, airframes, and the basic chemistry and physics that support these areas. R&D activities generally take place in laboratories where basic and applied research is performed. NAWSCL laboratory facilities are primarily within the developed areas at Mainsite and in the Propulsion Laboratories areas. Seven main laboratories are situated between Mainsite and the Airfield: Michelson Laboratory, the Engineering Laboratory, Lauritsen Laboratory, Thompson Laboratories, Advanced Weapons Laboratories, and the Propulsion Laboratories Complex, which is made up of the China Lake Propulsion Laboratory and the Salt Wells Propulsion Laboratory.

3.1.6.2 Acquisition

Acquisition involves acquiring weapons systems. NAWSCL supports the full spectrum of the NAVAIR acquisition programs by linking R&D with T&E throughout the entire acquisition process. NAWSCL participates from early involvement (R&D) through pre-production, post-production, and sustainment (T&E) efforts to ensure successful acquisition programs.

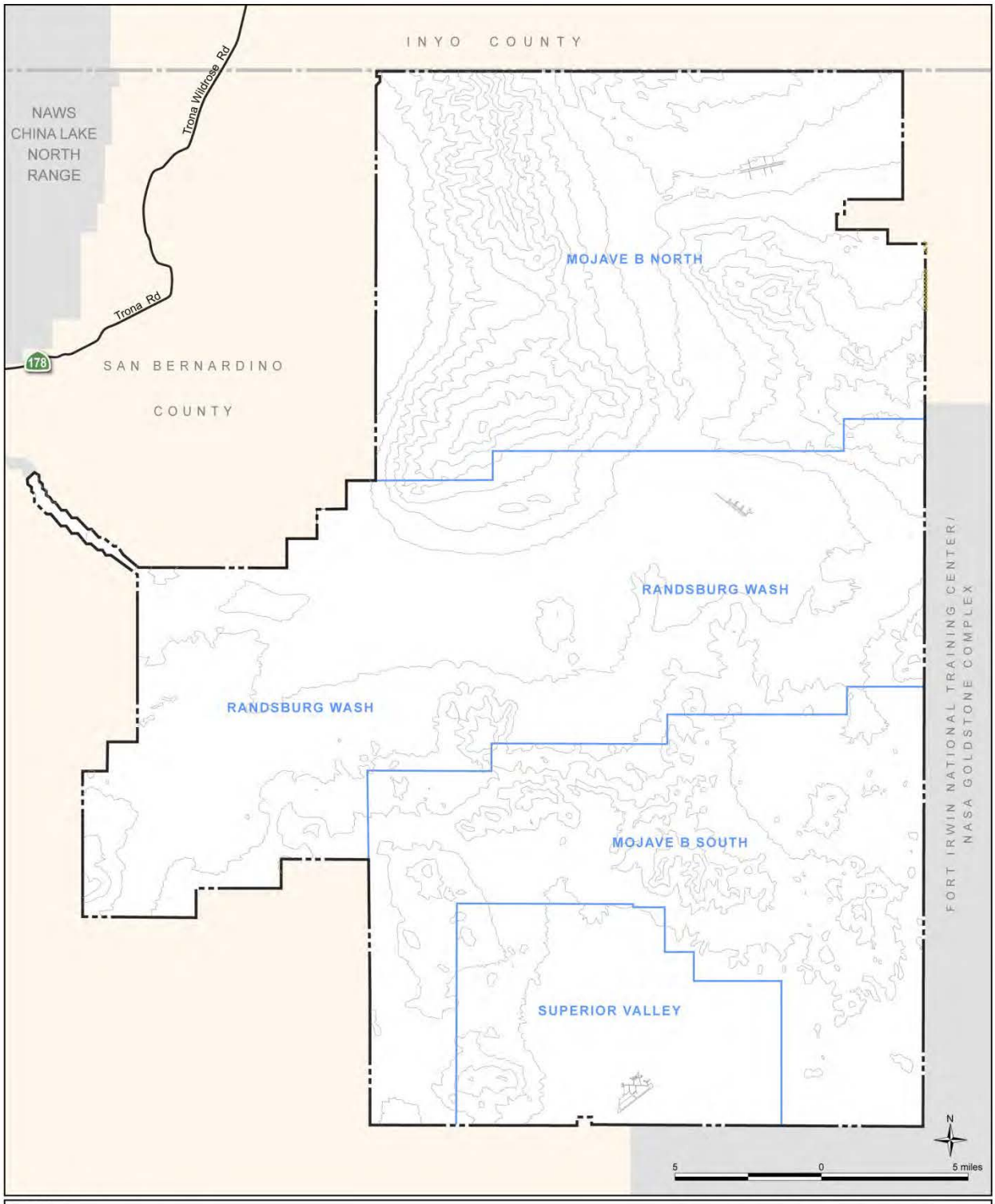


LEGEND
- Land Management Unit
- Installation Boundary
- Highway/Road
- County Boundary
- 500-Ft Contour

CHINALAKEEIS/015

Land Use Management Units North Range

Figure 3.1-3



Land Use Management Units South Range

Figure 3.1-4

Table 3.1-2
Land Management Units
(Page 1 of 2)

Management Unit	Description
North Range	
Airport Lake Range	Occupies approximately 57 square miles (148 square kilometers) in the central portion of the North Range. It is a large playa surrounded on three sides by hills and mountains. It contains the G-4 test track, weapons target sites, unmanned systems, and munitions impact areas.
Armitage Airfield	Occupies approximately 13 square miles (34 square kilometers) in the southern portion of the North Range. It contains three major runways; facilities for aircraft maintenance, hangars, munitions handling and storage; ground support equipment; and the Range Control Center.
Baker Range	Occupies approximately 121 square miles 313 square kilometers) in the western portion of the North Range. Contains the B-4 vehicle barrier track, target sites, and munitions impact areas.
Cactus Flats Range	Occupies approximately 2 square miles (5 square kilometers) in the northwestern portion of the North Range. It is located at an approximate elevation of 5,100 feet and includes warhead detonation test sites.
Charlie Range	Occupies approximately 42 square miles (109 square kilometers) in the southwestern portion of the North Range. Contains weapon target sites, munitions impact areas, and high-speed track testing.
Coles Flat Range	Occupies approximately 98 square miles (254 square kilometers) in the north-central portion of the North Range and includes weapons, target, and munitions impact areas.
Coso North Range	Occupies approximately 70 square miles (181 square kilometers) in the northwestern corner of the North Range. Represents a typical combat environment characterized by rough, mountainous terrain covered with piñon pine, juniper tree, and brush. It is located on a broad mountainous plateau and includes munitions impact areas.
Coso South Range	Occupies approximately 49 square miles (127 square kilometers) in the northwestern corner of the North Range and is located directly south of the Coso North Range. Represents a typical combat environment characterized by rough, mountainous terrain covered with piñon pine, juniper tree, and brush. It is located on a broad mountainous plateau and includes munitions impact areas.
Coso Geothermal	Occupies approximately 26 square miles (67 square kilometers) and is located southwest of the Coso South Range in the western portion of the North Range. Contains geothermal power plants, overflight for weapons training, and safety/security buffer for weapons testing.
Darwin Wash	Occupies approximately 62 square miles (160 square kilometers) in the northeast portion of the North Range. Located at 4,500 feet, it contains a major portion of the Naval Expeditionary Combat Command Training Complex used for combat training of explosives ordnance disposal technicians and other forces, as well as Joint Counter-Improvised Explosive Device Facility (JCIF).
George Range	Occupies approximately 305 square miles (790 square kilometers) in the eastern portion of the North Range known as Indian Wells Valley. The Argus Mountains, located to the east, and the Coso Mountains, located to the north, act as natural buffers for safety and security and ideal vantage points for test instrumentation. Contains the Weapons Survivability Complex, the Burro Canyon Open Burn/Open Detonation Facility, and warhead detonation test sites and munitions impact areas.

Table 3.1-2
Land Management Units
(Page 2 of 2)

Management Unit	Description
North Range (continued)	
Junction Ranch	Occupies approximately 65 square miles (168 square kilometers) in the northeastern part of the North Range. Test area for electromagnetic and specialized testing. Contains the Radar Cross Section Range.
Mainsite	Occupies approximately 8 square miles (21 square kilometers) in the southern portion of the North Range. Contains NAWSCL Headquarters, principal laboratories, housing, schools, and most administrative and support functions; is the largest developed area on-installation.
Main Magazines	Occupies approximately 5 square miles (13 square kilometers) in the southeastern portion of the North Range. Contains munitions storage, administrative facilities, and safety areas.
Ordnance Test and Evaluation	Occupies approximately 90 square miles (233 square kilometers) in the southeastern corner of the North Range. Contains facilities for safety (i.e., insensitive munitions), propulsion, and warhead testing.
Propulsion Laboratories	Occupies approximately 15 square miles (39 square kilometers) in the southeast corner of the North Range. It consists of two areas: the China Lake Propulsion Laboratory and the Salt Wells Propulsion Laboratory, each with more than 100 buildings and test facilities dedicated to propellant and explosives testing. Salt Wells is also China Lake's primary munitions processing/manufacturing area.
SNORT	Occupies approximately 15 square miles (39 square kilometers) in the southwest portion of the North Range. It is a heavily instrumented facility with multiple high-speed tracks and several special purpose areas with warhead testing and munitions impact areas. The vehicle barrier track is located at SNORT.
South Range	
Mojave B North Range	Occupies approximately 238 square miles (616 square kilometers) in the northern portion of the South Range. The range has two valley floors: one with a north/south orientation and the other east/west. High mountains surround each valley. Contains Wingate Airfield, weapons target sites, munitions impact areas, aircrew training, EW test sites, and GTT.
Mojave B South Range	Occupies approximately 180 square miles (466 square kilometers) in the southern portion of the South Range. Contains areas supporting aircrew training, EW test sites, and GTT.
Randsburg Wash Range	Occupies approximately 282 square miles (730 square kilometers) in the central portion of the South Range. Contains Charlie Airfield and the ECR, unmanned systems airfield/hangar, munitions impact areas and target sites, and numerous EW test sites. ECR is on the level floor of an isolated 15-mile-long valley, bordered by mountains to the north and south.
Superior Valley	Occupies approximately 74 square miles (192 square kilometers) within Mojave B South. It is the primary location for aircrew training and tactics development and munitions impact areas.

3.1.6.3 Test and Evaluation

Weapons T&E is a continuous process. Open-air ranges are used to evaluate the systems under natural conditions and, to the extent practicable, replicate realistic employment and operations scenarios. The North and South Ranges can accommodate a wide variety of open-air test requirements as documented in Appendix B of this EIS/LEIS.

Weapon systems and components are tested and evaluated under realistic operating conditions in the air and on the ground ranges at NAWSCL to replicate realistic scenarios to the maximum extent feasible. Target areas are designated for delivering munitions, such as bullets, missiles, rockets, and bombs, and may include the use of a physical object, such as a billboard, a tank, or an electronic target. General categories of T&E activities include air and surface launched weapons, communications, DE, electromagnetics, electronic warfare and countermeasures, munitions T&E, sensor, weapons survivability, and test tracks. Additional T&E capabilities include the following:

- High-speed test tracks, which aid in testing weapons at operational speeds;
- Testing of weapons-related systems, such as parachutes;
- Environmental/safety test facilities, where tests are performed to evaluate a weapon or weapon system's reaction to atmospheric elements, such as vibration, impact, pressure, and extreme temperatures; and
- Nondestructive test facilities, such as large x-ray facilities.

Air Tests

Air tests of weapons at NAWSCL occur primarily on the North Range. Air tests include air-to-air and air-to-surface events. Air-to-air events generally employ aircraft, a weapon system, a target, countermeasure devices such as flares or chaff, instrumentation sites, and range support facilities. Air tests can also employ unmanned aerial vehicles (UAVs) and/or target drones. Air-to-air testing assesses and evaluates weapons and weapon systems and the integration of weapon systems with the aircraft. At NAWSCL, air-to-air testing occurs primarily at George Range, with other areas providing maneuver space, and safety and security buffers.

Air-to-surface testing assesses and evaluates weapon systems, the integration of air-to-surface weapons or weapon systems to the aircraft, warhead effectiveness, and weapon systems and/or aircraft software and hardware modifications or upgrades. At NAWSCL, air-to-ground testing occurs primarily at George Range, Charlie Range, Airport Lake, Baker Range, and Coso Range.

Surface Tests

Surface tests take place on the North and South Ranges. These tests encompass surface-to-air, surface-to-surface, and ground tests, and may involve missile launching, gun and artillery firing, and mass detonation testing of energetic materials (bombs and explosives). North Range surface tests are conducted primarily on George Range, at the high-speed test tracks, aircraft survivability facilities, and other munitions T&E facilities. South Range surface tests occur primarily in the Randsburg Wash area and include the testing of electronic combat systems, threat emitters, light assault vehicles, surface-launched missiles, and large-caliber gun ammunition fuse testing.

3.1.6.4 Training Activities

NAWSCL also provides facilities and support for aircrew and ground-based training activities by military units from all branches of DoD. These activities are accommodated on a noninterference basis with the primary RDAT&E mission. The varied terrain and environmental conditions throughout the North and

South Ranges support training in air-to-air and air-to-surface combat skills, including parachute systems training. GTT is also an element of NAWSCL activities that uses the North and South Range targets and test areas, roads, and facility sites.

Aircrew Training
Aircrew training address requirements for proficiency in the use of evolving aircraft and weapons system technologies and warfighter tactics for navigation, target acquisition, weapons systems delivery, threat evasion, and battle damage assessment in realistic combat scenarios and threat environments throughout the varied terrain on the NAWSCL ranges. Aircrew training occurs over both the North and South Ranges. On the North Range, aircrew training takes place over the Coso Military Target Range, Baker Range, Charlie Range, George Range, and Airport Lake. Aircrew training in electronic combat over the South Range uses impact targets at Charlie Airfield in Randsburg Wash, Wingate Airfield in Mojave B North, and the Superior Valley Range. The Superior Valley Tactical Training Range is the most heavily used area for tactical training with air-to-surface weapon systems for fleet squadrons. This range is used primarily to deliver inert munitions, including practice bombs, rockets, flare, chaff cartridges, and gun projectiles on static and/or moving targets.

Ground Troop Training
NAWSCL provides limited opportunities to perform individualized GTT missions. This involves theater-relevant combat training of relatively small groups (with wheeled and small-tracked vehicles) with emphasis on Special Forces, EOD, expeditionary force, construction battalion (Seabees), and reconnaissance. The need for GTT on the varied terrain conditions and against contemporary threat environments at NAWSCL is also shared by regional ground forces from Naval Amphibious Base Coronado, Marine Corps Air Ground Combat Center at Twenty-nine Palms, Marine Corps Base Camp Pendleton, National Training Center Fort Irwin, and other ground forces training units. The proximity of the NAWSCL ranges to other home bases and the diversity of the NAWSCL terrain and threat assets provide an ideal environment for meeting ongoing and evolving aircrew and GTT needs.

GTT may be on foot, with or without military support animals (i.e., horses, mules, or military working dogs) and may involve multiple support vehicle types. GTT may also involve support aircraft (manned or unmanned; fixed or rotary wing) and access to distinct terrain such as mines, caves, tunnels, sloped areas, or vegetated areas to satisfy unique training requirements.

Small group training (approximately 8 troops) without support vehicles may be conducted in currently approved areas as well as undisturbed areas throughout the North and South Ranges. GTT activities occurring in undisturbed areas would have no associated ground-disturbing activities. These activities occur on an as-needed basis. GTT involving larger groups (not to exceed 40 troops) would also occur. Large group GTT activities may only occur in areas where ground disturbance would not be increased, such as existing travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, and instrumentation sites. These training activities may expand by up to 25 percent annually. Small group training with support vehicles occur on an as-needed basis.

Parachute Testing and Training
Parachute drop zones are located on both the North and South Ranges. They are typically used to support RDAT&E and all types of parachute proficiency training (personnel or equipment).

3.1.6.5 Support Activities

Most of the land currently used for military support (administrative buildings, public works, family housing, community center, and other support facilities) are within developed areas at Mainsite and the other developed areas in the southern portion of the North Range. Administrative offices, industrial buildings,

laboratories, and storage areas are primarily located at Mainsite, Armitage Airfield, and the Propulsion Laboratories area. Mainsite facilities include the headquarters, administrative offices, Public Works Department compound, industrial buildings, and testing/research buildings. Operations, maintenance, medical, administration, housing, recreation, supply, public schools, fire and police, childcare, religious, and exchange/commissary facilities are also located at Mainsite.

Facilities at Armitage Airfield include three runways, aircraft facilities, aircraft fuel storage facilities, munitions handling and storage facilities, ground support equipment maintenance facilities, a fire station, and aviation supply warehouses. The Propulsion Laboratories consist of building and test facilities dedicated to RDAT&E of propellants and explosives. A few administrative facilities are also at the Range Operations Center in Randsburg Wash, at the SNORT facility on Charlie Range, and at Junction Ranch. Other facilities and infrastructure are located throughout the North and South Ranges. Facilities occupy approximately 8,912 acres, or 1.5 percent, of the North Range, and 527 acres, or 0.1 percent, of the South Range.

3.1.6.6 Munitions Use

Since many of the activities at NAWSCL involve the testing and use of explosives (live munitions), extensive safety programs continue to be implemented to ensure the safety of personnel and property and to minimize the risk of using explosives and their components. Safety programs and operational procedures are employed through all phases of munitions use, including the storage, transportation, loading, detonation, and cleanup of range test and target sites. Munitions are generally classified as live or inert. Live munitions generally contains an HE warhead. Inert munitions does not have a live warhead, but may contain a fuse, sensor, spotting charge, or other energetic materials that may pose a safety hazard. At NAWSCL, approximately 80 percent of the munitions used is inert. HE munitions use on-installation (approximately 20 percent) occurs primarily at the Airport Lake Target area, with the remainder being dispersed at other authorized areas depending on RDAT&E needs.

Historic Munitions Use

NAWSCL land ranges played a critical role in helping the U.S. meet the challenges and emergencies of World War II, the Korean Conflict, and the Vietnam War. Due to testing and training that occurred on NAWSCL lands during those early years, and as an ongoing safety consideration, remote areas of NAWSCL may contain UXO and are managed in accordance with the NAWSINST 8020.15 and the NAWCWD/NAWSINST 5090.1. UXO and related debris from historical test and training activities are recovered, as funding permits.

Contemporary Munitions Use

Today, munitions use on the ranges is carefully controlled, monitored, and tracked. It is not uncommon for a large quantity of a particular type of munitions to be used one year and then for the tempo to drop dramatically the following year. The type and tempo of munitions use at NAWSCL fluctuates from year to year based on need (which is driven by operational needs that evolve in response to world events). Inert and HE munitions are used to meet defined mission requirements and are allocated to specific target and test sites.

Range clearance of UXO from range test and training activities are a standardized part of NAWSCL range activities. The NAWSINST 8020.15 establishes policies and procedures for range access, such as UXO escort requirements. Explosives use must meet established test and standard operating procedures (SOPs). Debris and contamination from tests are removed from the ranges and test sites to the greatest extent possible and managed according to NAWSINST 8020.1 and current hazardous waste management procedures. EOD and Range Ground Operations personnel perform this function.

3.1.7 On-Installation Nonmilitary Land Uses

Authorized nonmilitary land uses at NAWSCL include Native American traditional and religious uses, geothermal production, limited recreational opportunities, and scientific research and education projects. Most activities are accommodated on a case-by-case basis so that they do not interfere with military missions.

3.1.7.1 Native American Access

Native American access to NAWSCL-administered lands is accommodated under an existing MOA signed in 1979 between the DoN and Native American tribes. This MOA allows visitation to the Coso Hot Springs and Prayer Site areas, which are located in the Coso Geothermal LMU. Both locations are areas of interest for traditional and religious purposes, and are recognized as important Native American traditional sacred sites. The Hot Springs area had been developed and used as a resort by other groups in the past, but the buildings and facilities are now abandoned. In 1978, the site was listed on the National Register of Historic Places (National Register) as a multi-component historic and Native American resource. In 1979, a DoN MOA granted access to the Hot Springs by the Owens Valley Paiute-Shoshone Band and the Kern Valley Native American Community for ceremonial activities eight times per year (NAWC 1979). As a result of government-to-government dialogue between participating tribes and the DoN by and through the NAWSCL Commanding Officer, a new MOA was developed in January 2014 to improve access to Coso Hot Springs. The new agreement makes provision for increased access to Coso Hot Springs, by descendants of indigenous people that inhabited lands and/or conducted traditional cultural activities within the boundaries of NAWSCL, for the purpose of continued traditional cultural observances and practices. As of this writing, the new MOA has been signed by the DoN and one tribe (Timbisha Shoshone).

3.1.7.2 Geothermal

The Coso KGRA is located in the Coso Geothermal LMU and encompasses an approximately 15- by 16-mile (24- by 26-kilometer) area extending across a portion of the North Range and onto adjacent BLM land. The Coso geothermal development is run by a single operator, the Coso Operating Company, in part as a DoN contractor (Navy One and Two power plants) and as a BLM geothermal lease holder (BLM East and West power plants). These four power plants are located within the Coso Geothermal LMU. Access to the geothermal development area is controlled by DoN in the same way that access is controlled to other lands within NAWSCL. Coso geothermal development personnel need to follow range safety protocols in order to gain access to the National Register lands (Coso Hot Springs).

3.1.7.3 Recreation

Public access for recreational programs is conducted in accordance with Installation objectives to promote and continue environmental resource conservation. The following discussion presents the current scope and status of recreational activities at NAWSCL.

Camping. Camping is permitted on a case-by-case basis. Recreational camping requires a Command-approved escort trained in environmental, security, and safety issues. Before camping, the NAWSCL escort provides a briefing about NAWSCL safety and security, and protection of natural and cultural resources. Campers are limited to 16 individuals per night; Installation safety and security measures are enforced.

Golf and Gym Access. Access to the gymnasium and golf course is permitted for authorized members of the public. These facilities are located at Mainsite.

Hiking. Hiking on existing roads and trails is allowed. Hiking currently occurs on B-Mountain.

Hunting. Chukar hunting is limited to a discrete area on the North Range with a limited number of escorted hunters. Hunts occur only during years when there is an abundance of chukar and are open to members of the military and public.

Equestrian Use. Equestrian use of G-Range Approach Corridor (south of Mainsite along the southern boundary of the North Range) is permitted on established dirt roads and trails for informal use and during formal public events scheduled by BLM, provided such use does not conflict with mission requirements.

Off-Highway Vehicle Use. OHV use is allowed at BLM scheduled public events that cross the Randsburg Wash Access Road. Per agreement between the DoN and BLM, off-road crossing is only permitted over the Randsburg Wash Access Road twice per event within an established footprint. Off-road vehicles (ORVs) are prohibited except to cross the Randsburg Wash Access Road during BLM scheduled events.

Petroglyph Tours. Public access to Little Petroglyph Canyon is permitted on a case-by-case basis. Petroglyph tours are described in NAWSCL Instruction 5532.1, Use of Range Areas. Most tours are limited to Little Petroglyph Canyon (permission to tour other petroglyph areas is rarely granted because of difficult access and the high sensitivity of the art) and are conducted under a cooperative agreement between NAWSCL and the Maturango Museum in Ridgecrest. Museum-sponsored tours to Little Petroglyph Canyon are limited to 6 tours of up to 50 individuals each per month, with additional tours of smaller groups allowed. Additional tours of Little Petroglyph Canyon (not sponsored by the museum) are allowed on a case-by-case basis, provided the total number of individuals in the canyon at any one time does not exceed 75. These public tours are conducted by certified tour guides who are trained in NAWSCL safety and security requirements, including measures for protecting the rock art.

Bird Watching. The Audubon Society conducts annual bird counts (including the Christmas Bird Count, the Birdathon, and surveying birds of IWV). Typical attendance is less than 20 people per event. Individuals make bird observations and record trends in bird populations. The Audubon Society's bird counts are allowed as annual events at NAWSCL.

Photography. Limited public photography, under conditions established by the DoN and at the DoN's discretion, would continue to be allowed. Generally, photography is allowed in areas associated with recreation permits (e.g., Birchum Springs, Renegade Canyon, and Little Petroglyph Canyon).

3.1.7.4 Research and Education

Research and educational activities vary from year to year depending on the need or interest of visitors and NAWSCL environmental resources managers. Emphasis is placed on efforts that further the knowledge and understanding of the physical, natural, and cultural resources of NAWSCL lands and their relationship to the region and surrounding ecosystems. In addition, as a national-class research and development center, NAWCWD maintains extensive ties to academia and hosts continual access and collaboration activities at NAWSCL for a wide range of topics, such as an annual archaeological field camp for students. Proposals for access related to research or education is considered on a case-by-case basis. Access for these activities must comply with the NAWSCL Public Access Policy.

3.1.7.5 Darwin Water Supply

The Darwin Community Services District (DCSD) has rights to access its historical water source (Coso Cold Springs), which is within the NAWSCL boundaries. On November 1, 1979, the DCSD was granted an easement in perpetuity for the construction, installation, operation, maintenance, repair, and

replacement of a water pipeline to the Coso Cold Springs. This easement authorizes DCSD access in perpetuity to the water source at Coso Cold Springs, the pipeline right-of-way, and such roads as may be required to construct and maintain the DCSD water system. The accompanying MOA, dated November 3, 2010, sets specific requirements for DCSD access and delineates administrative responsibilities.

3.1.8 Off-Installation Land Ownership

Most of NAWSCL is surrounded by federally managed lands, including the Army's National Training Center at Fort Irwin and lands managed by BLM and the National Park Service (NPS). Small parcels of state-managed land and private lands are also located in the surrounding area.

3.1.9 Off-Installation Land Use

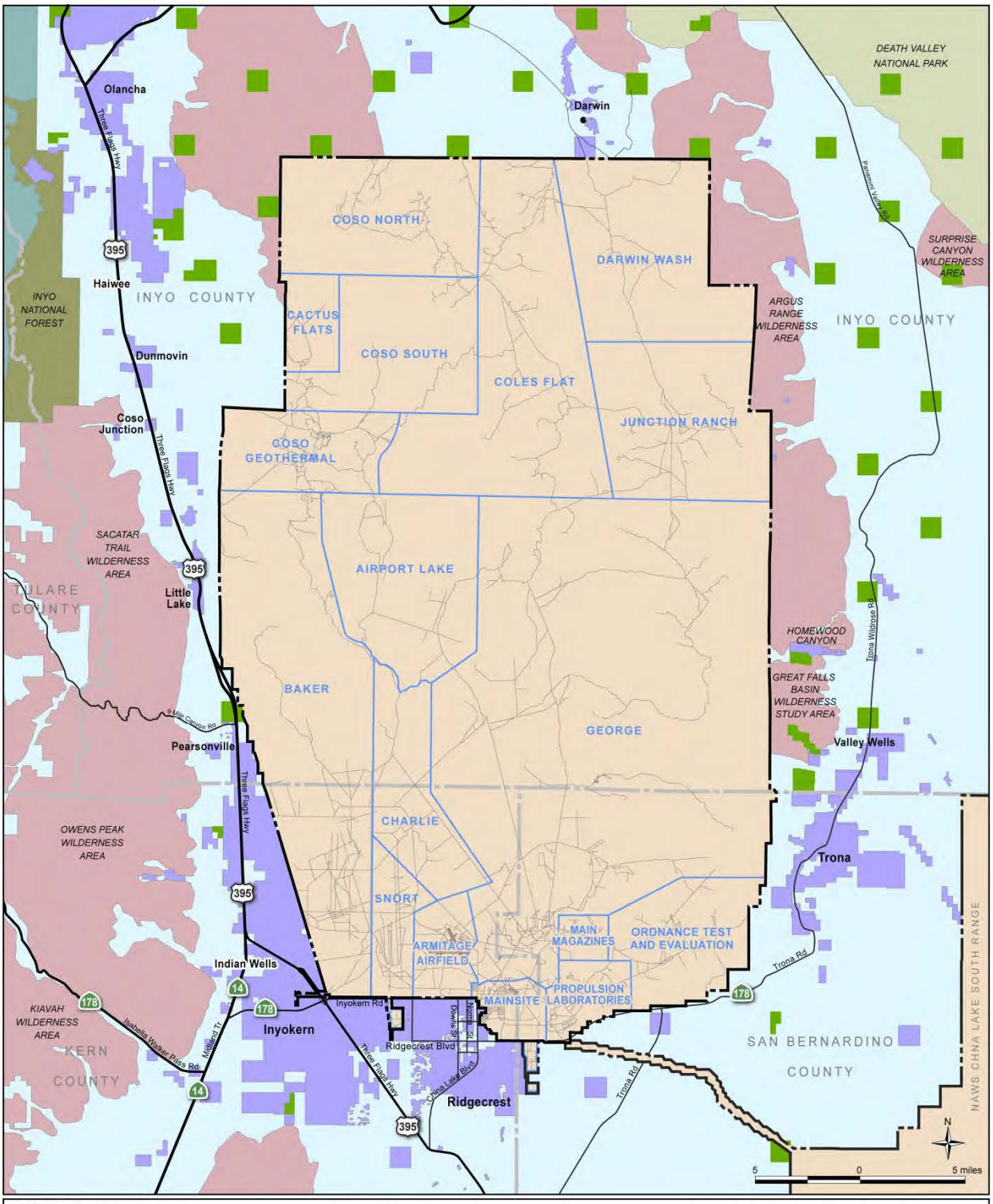
The northern two-thirds of the North Range are in Inyo County, and the southwestern and southeastern portions of the North Range are in Kern and San Bernardino counties, respectively. The South Range is entirely in San Bernardino County. NAWSCL is located in a predominately rural area and is generally surrounded by wilderness, parks, forests, open space, and conservation areas (Figures 3.1-5 and 3.1-6). The communities of Ridgecrest and Inyokern are adjacent to the Installation on the southern boundary of the North Range. The communities of Trona and Darwin are within 5 miles (8 kilometers) of the Installation's east and northeast boundaries, respectively. Urban development surrounding NAWSCL provides housing, retail, and light industrial services, and recreational opportunities to the local community. Ridgecrest is the only incorporated city in the NAWSCL region, although there are several other incorporated communities in the vicinity.

Public lands managed by BLM and NPS surround the remainder of the NAWSCL North Range boundary and the north, west, and south boundaries of the South Range. The Army's National Training Center at Fort Irwin is located adjacent to the east boundary of the South Range, as are lands managed for the NASA Goldstone Complex. The inactive Cuddeback Lake Gunnery Range (Air Force) is located within 5 miles (8 kilometers) of the south boundary of the South Range.

3.1.9.1 Inyo County

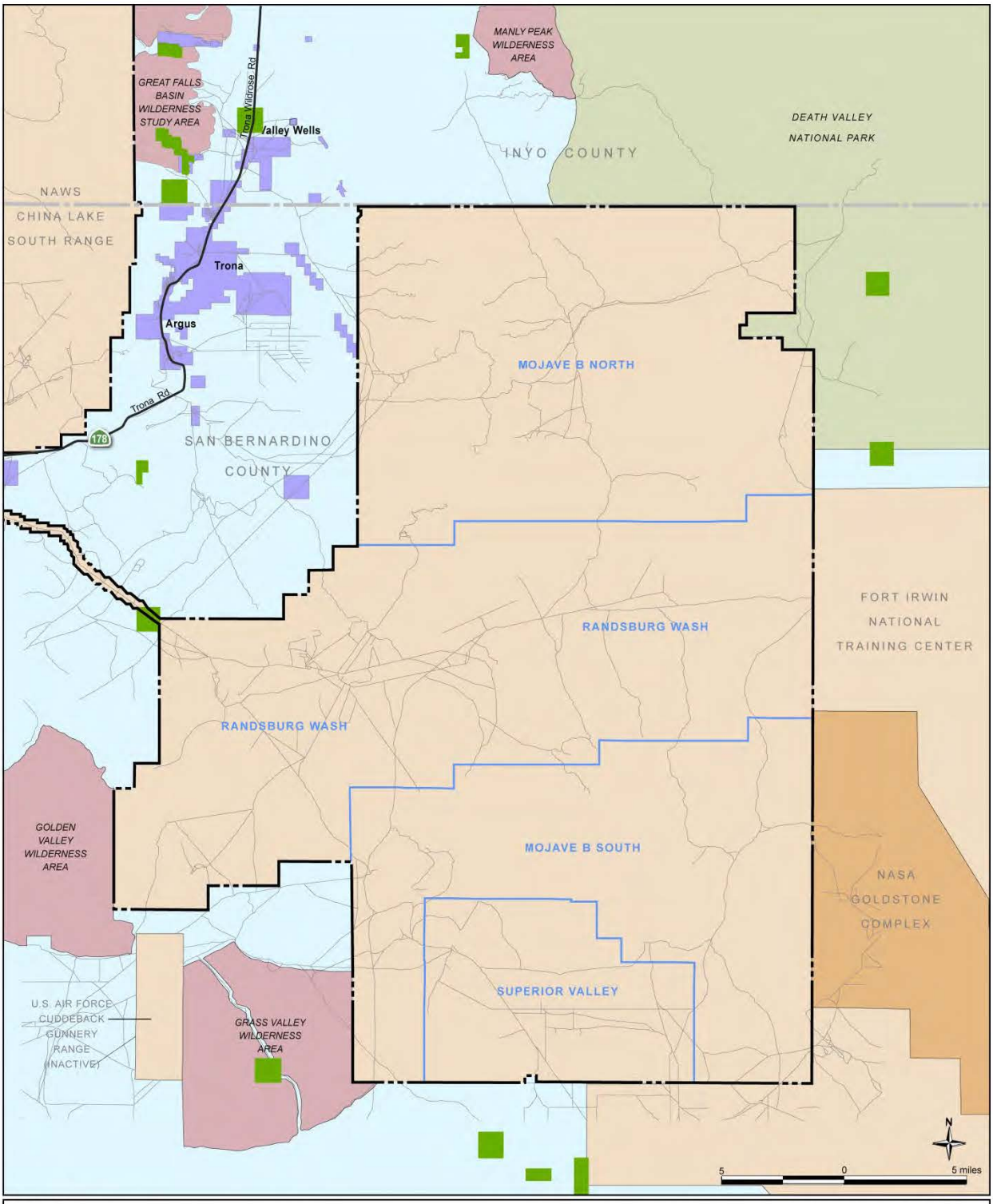
Adjacent land use in Inyo County includes federal wilderness; open space and conservation areas; undeveloped land; non-wilderness areas; and small, widely dispersed populated areas. The Inyo County General Plan identifies land use designations for all land in the county (Inyo County 2001). The Inyo County General Plan update was approved in December 2001. No land uses were changed during the plan's revision, and established land use patterns are not expected to change in the foreseeable future. The unincorporated residential community of Darwin was originally an 1875 mining camp and is located directly north of the North Range, approximately 2.5 miles (4 kilometers) from the Installation boundary. The unincorporated communities of Homewood Canyon, Panamint Springs, and Valley Wells are located east of the North Range.

There are six unincorporated rural communities west of North Range: Pearsonville, Little Lake, Coso Junction, Dunmovin, Haiwee, and Olancha. These communities are primarily residential areas surrounded by large expanses of open space and agriculture, with some highway commercial use at Coso Junction. Coso Junction has a public land use designation because of its proximity to, and association with, a Caltrans rest area. Little Lake and Pearsonville are within 1 mile (1.6 kilometers) of the west boundary of the North Range. Little Lake is a rural community with a commercial land use designation. Pearsonville is a rural community at the Inyo County/Kern County boundary and has industrial, commercial, and residential land use designations. All of these communities lie within 10 miles



Off-Installation Land Status North Range

Figure 3.1-5



Off-Installation Land Status South Range

Figure 3.1-6

(16 kilometers) of the NAWSCL boundary. Haiwee Reservoirs, which are part of the Los Angeles Department of Water and Power aqueduct system, are west of the Installation.

3.1.9.2 Kern County

The southwest portion of the North Range, which includes Mainsite and Armitage Airfield, is in Kern County. The Kern County General Plan, adopted in June 2004 and amended in September 2009 (Kern County 2009), identifies land use designations for land in the county, and contains a Desert Region section for land use management in the eastern portion of the county. Eastern Kern County is a rural area made up predominately of federal lands intermixed with private lands.

Ridgecrest and Inyokern are located in the Desert Region of Kern County and are contiguous with the southern boundary of the North Range and southwest of the North Range, respectively. Inyokern's economic base consists primarily of service-oriented establishments located along State Highway 178. Most of Inyokern is residential, with many residents employed at NAWSCL or businesses in Ridgecrest. The area surrounding Inyokern on all sides, encompassing approximately 25,500 acres, is currently zoned for agriculture. There are currently over 31,000 acres of land within the IWV groundwater basin that is zoned for agriculture. New agricultural developments, especially in the area north of Inyokern, are on the rise with approximately 2,500 acres of pistachios and alfalfa planted since 2011. Approximately 22 percent of Inyokern's land area is designated for industrial use (U.S. Navy 1997). Most other Kern County land adjacent to NAWSCL is occupied by low-density residential use or open space.

3.1.9.3 San Bernardino County

The southeast region of the North Range and all of the South Range are in the Mountain-Desert Planning Area of San Bernardino County. The San Bernardino County General Plan, adopted in March 2007 (San Bernardino County 2007), identifies land use guidelines and designations for land in the county. The northern edge of the South Range is contiguous with the boundary between San Bernardino County and Inyo County. More than half of the eastern edge of the South Range borders the Army's National Training Center, Fort Irwin, and the remaining northeastern corner abuts Death Valley National Park.

The areas of San Bernardino County immediately to the east and south of NAWSCL are managed by BLM and are primarily designated for open space and conservation use. NAWSCL and BLM coordinate on issues regarding compliance with the California Desert Conservation Area Plan (CDCAP) to ensure compatible land use for the area.

The unincorporated community of Trona is less than 3 miles (4.8 kilometers) east of the southeast boundary of the North Range, and located between the North and South Ranges. The community accommodates residential, commercial, and industrial land uses. Trona's largest employer, Searles Valley Minerals, operates a mineral processing plant that has been in operation in the area since the 1870s (U.S. Navy 1997). Established land use patterns in the vicinity of NAWSCL are not expected to change in the foreseeable future.

3.1.9.4 City of Ridgecrest

With a population of about 26,000, Ridgecrest is the only incorporated city near NAWSCL. According to the City of Ridgecrest General Plan (adopted December 2009), approximately 9 square miles of the city limits lie within the boundary of NAWSCL; however, the city does not exercise land use authority over this area (City of Ridgecrest 2009). The city is a mixture of residential, commercial, institutional, industrial, and recreational land uses. The development philosophy reflected in the City of Ridgecrest General Plan is for the city to continue its role as a support community for NAWSCL. Ridgecrest provides housing, shopping,

recreation, and other services and facilities for NAWSCL and NAWCWD personnel, contractors, and their dependents. Land uses in the proximity of NAWSCL include commercial and office, industrial, and medium- and high-density residential areas. Established land use patterns in the vicinity of NAWSCL are not expected to change in the foreseeable future.

3.1.9.5 Bureau of Land Management Resource Areas

The BLM-administered land surrounding NAWSCL is part of the Ridgecrest Resource Area and managed by the Ridgecrest Field Office of BLM's California Desert District. Under the FLPMA, the land is managed for multiple uses, including grazing, mining, wilderness, and recreation. Grazing includes yearly and intermittent allotments for cattle and sheep. Mining sand, gravel, gold, and trona (a mineral consisting of hydrous acid sodium carbonate) has been a historic use throughout the area. Recreational use includes hunting and target shooting, camping, sightseeing, rock hounding and hobby prospecting, hiking and backpacking, rock climbing, picnicking, skydiving and hang gliding, nature activities, and ORV use. Uses permitted within particular tracts of BLM-managed land are designated by the CDCAP land use classifications. In accordance with CDCAP guidelines, BLM also exchanges federal land for private land when it results in greater compatibility with existing and proposed uses and plans.

3.1.9.6 Bureau of Land Management Wilderness Areas

The CDPA designated 69 individual wilderness areas covering 3.6 million acres (1,457,000 hectares). BLM's *Wilderness Areas Maps and Information Guide* (DoI 1995) shows 10 wilderness areas around NAWSCL, all of which may include other federal, state, and private land. Table 3.1-3 lists the wilderness areas and other pertinent data.

Table 3.1-3
Bureau of Land Management Wilderness Areas Near NAWSCL

Area	Acres (hectares)	Nominating Resource
Argus Range	74,890 (30,308)	Biological, Geological, Cultural
Golden Valley	37,700 (15,257)	Biological
Malpais Mesa	32,360 (13,096)	Biological, Geological, Cultural
Grass Valley	31,695 (12,827)	Biological
Surprise Canyon	29,180 (11,809)	Biological, Cultural
Coso Range	50,520 (20,445)	Biological, Geological
Sacatar Trail	51,900 (21,004)	Biological, Cultural
Owens Peak	74,640 (30,207)	Biological, Cultural
Kiavah	88,290 (35,731)	Biological
Manly Peak	16,105 (6,518)	Biological, Cultural, Geological
Darwin Falls	8,600 (3,480)	Biological, Geological
Great Falls Basin Study Area	8,485 (3,434)	Biological

Source: DoI 1995.

3.1.9.7 Death Valley National Park

NPS has jurisdiction over Death Valley National Park, which is directly north and east of NAWSCL. CDPA realigned the park's boundary and changed its status from National Monument to National Park. The boundary is now contiguous with the northeast boundary of the South Range. The park encompasses 3.2 million acres (1,295,040 hectares).

3.1.9.8 National Forests

The U.S. Forest Service (USFS) has jurisdiction over Inyo National Forest, located approximately 8 miles (13 kilometers) west of the North Range, and Sequoia National Forest, located approximately 10 miles (16 kilometers) west of the North Range. Management of National Forest land is for sustained yield and multiple uses, including logging, mining, grazing, and recreation such as fishing, camping, and hunting (U.S. Navy 1997).

3.1.9.9 Other Military Land

In 1981, Fort Irwin became the Army's National Training Center and is the Army's principal training facility for armor maneuver training. National Training Center training activities simulate full-scale air and land combat situations on more than 750,000 acres (303,515 hectares) of land that is adjacent to the eastern and southern boundary of the South Range. The Air Force Cuddeback Gunnery Range, located west of Mojave B South in the South Range, is deactivated.

This page intentionally left blank.

3.2 NOISE

3.2.1 Region of Influence

The ROI for noise issues includes NAWSCL and the surrounding communities of Ridgecrest, Inyokern, Trona, Valley Wells, Coso Junction, Dunmovin, Little Lake, Darwin, Haiwee, Homewood Canyon, Olancha, Pearsonville, and Keeler. The ROI includes areas that could be affected by on-installation noise sources such as ground-based and flight-related activities over the North and South Ranges, and flight events at Armitage Airfield.

3.2.2 Fundamentals

Noise is unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. There is wide diversity in responses to noise that vary not only according to the type of noise and the characteristics of the sound source, but also according to the sensitivity and expectations of the receptor, the time of day, and the distance between the noise source and the receptor. The noise levels at a receptor location can be measured using a sound level meter or predicted using a mathematical model based on provided source noise strength data.

Normal conversational speech has a sound pressure level of approximately 60 decibels (dB). Sound pressure levels above 120 dB begin to be felt inside the human ear as discomfort, and eventually pain. The minimum change in sound pressure level that an average human ear can detect is about 3 dB. A change in sound pressure level of 10 dB is usually perceived by the average person as a doubling of the sound's loudness, and this relationship holds true for loud sounds and for quieter sounds (Table 3.2-1). Typical sound pressure levels are illustrated in Figure 3.2-1.

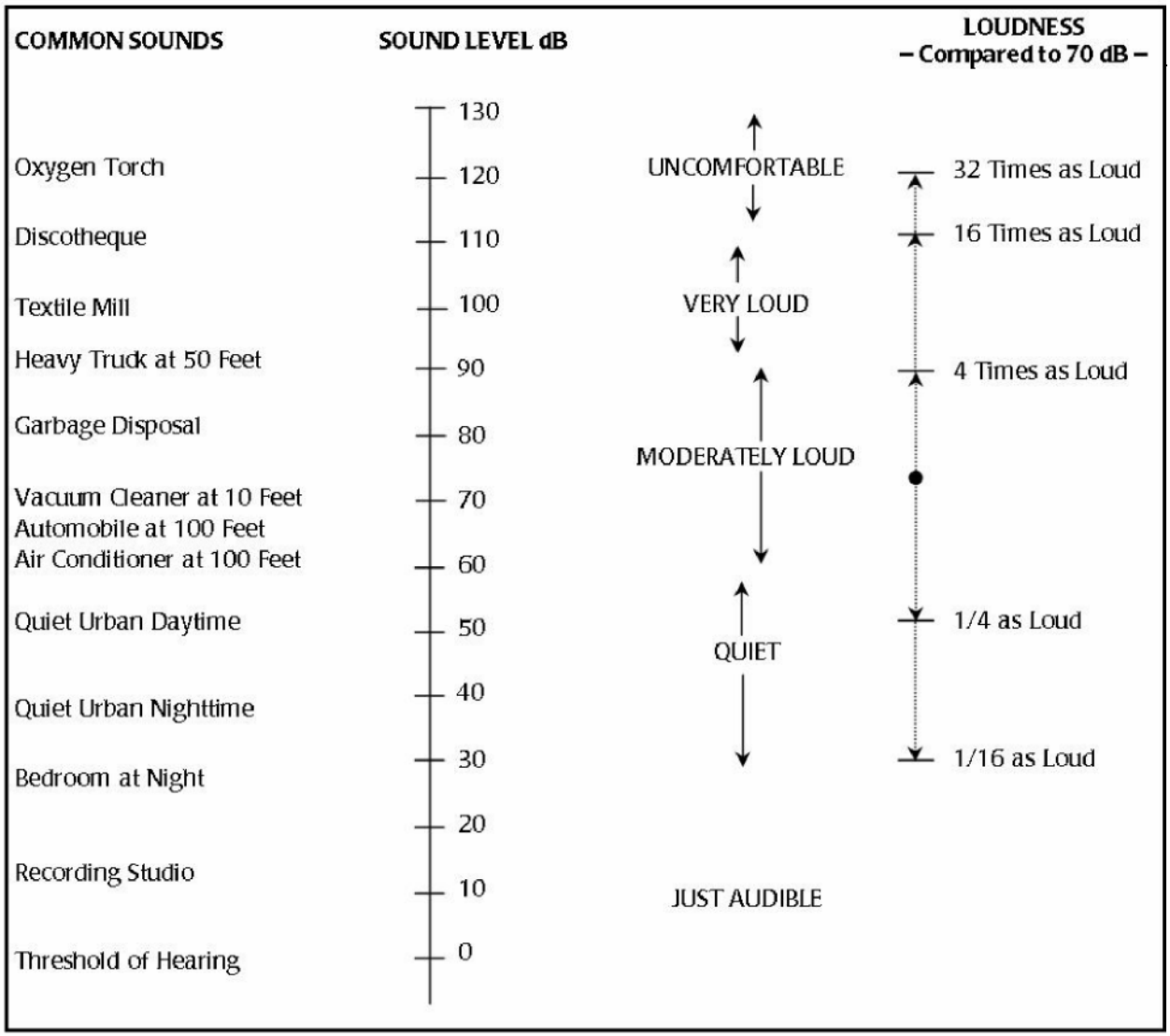
Table 3.2-1
Decibel Changes and Loudness

Change (dB)	Relative Loudness
0	Reference
3	Barely perceptible change
5	Readily perceptible change
10	One-half or twice as loud
20	One-fourth or four times as loud
30	One-eighth or eight times as loud

Source: Federal Highway Administration 2010.

Noise Metrics

Ambient noise conditions around NAWSCL land ranges are dominated both by impulsive noise (generated by small arms and large-caliber weapons testing, troop training, and explosives detonation) and by continuous noise (generated by the operation of military aircraft). Continuous noise is fundamentally different from impulsive noise. As such, noise threshold criteria differ. For example, permanent damage to unprotected ears due to continuous noise occurs at approximately 85 dB, based on an 8-hour-per-day exposure, while the threshold for permanent damage to unprotected ears due to impulsive noise is approximately 140 dB peak noise based on 100 exposures per day (Prater 1976).



Source: *Handbook of Noise Control*, C.M. Harris, Editor, McGraw-Hill Book Co., 1979, and FICAN 1992.

Figure 3.2-1
Typical Sound Pressure Levels

Military activities are often the source of sounds (e.g., small arms and large-caliber weapons firing, explosive detonations, aircraft flyovers) that are experienced by the military community and civilians who live and work around military installations. Given the continuous versus impulsive types of noise, the variations in frequency and period of noise exposure, and the fact that the human ear cannot perceive all pitches and frequencies equally well, noise from military activities is measured using different noise metrics that reflect the different noise characteristics. The common metrics used to analyze noise are as follows:

- **Day/Night Sound Level (DNL)** – This metric cannot be measured directly; rather, it is calculated as the average sound level in dB during a 24-hour period with a 10-dB penalty applied to nighttime sound levels. This penalty accounts for the fact that noises at night sound louder because there are usually fewer noises occurring at night. The DNL is useful to account for the difference in response of people to noises that occur during sleeping hours as compared to waking hours. However, in California, where NAWSCL is located, an equivalent but different DNL metric called **Community Noise Equivalent Level (CNEL)** is used. The CNEL applies a 10-dB penalty to nighttime hours (10 p.m. to 7 a.m.) and a 5-dB annoyance adjustment for evening time (7 p.m. to 10 p.m.). Because CNEL and DNL values for the same noise condition seldom differ by

more than 1 dB, these values are often used interchangeably when noise-level criteria and standards are interpreted.

- **Peak Sound Level (dBP)** – The dBP can be measured and is the peak sound level that occurs in any given period. This metric is used to quantify short-duration impulses such as noise related to large-caliber weapons firing and explosive detonations.

- **Sound Exposure Level (SEL)** – Another measure of sound level for characterizing a discrete noise-generating event (e.g., a gunshot) is the SEL. Although dBP described above provides some measure of the intrusiveness of a sound event, it does not completely describe the total event, since the total amount of time the sound is heard is also significant. The SEL combines both characteristics into a single metric. It assumes that all of the energy of the noise-generating event is compressed into a 1-second time duration. This level is useful as a consistent rating method that can be straightforwardly combined with other SEL readings to provide a complete noise scenario for measurements and predictions. This event noise metric can be used for both impulsive and continuous noise events.

Appendix I provides additional information about the measurement and prediction of noise. This appendix also provides more information on the units used in describing noise, as well as information about the effects of noise such as annoyance, sleep and speech interference, health effects, and effects on animals.

Frequency Weighting

A number of factors affect sound as the human ear perceives it. These include the actual level of noise, the frequencies involved, the period of exposure to the noise, and changes or fluctuations in noise levels during exposure. To correlate the frequency characteristics from typical noise sources to the perception of human ears, several noise frequency weighting measures have been developed. The most common frequency measures are the following:

- **A-weighted Scale** – Since the human ear cannot perceive all pitches or frequencies equally well, these measures are adjusted or weighted to compensate for the human lack of sensitivity to low-pitched and high-pitched sounds. This adjusted unit is known as the A-weighted decibel, or dBA. The dBA is used to evaluate noise sources related to transportation (e.g., traffic and aircraft) and to small arms firing (smaller than 20 millimeters [mm]).

- **C-weighted Scale** – The C-weighted scale measures more of the low-frequency components of noise than does the A-weighted scale. It is used for evaluating impulsive noise and vibrations generated by large-caliber weapons, such as rockets, artillery, mortars, guns (20 mm or greater), and explosive charges. C-weighted noise levels are often represented as dBC.

Noise levels from one scale cannot be added or converted mathematically to levels in another weighting scale.

3.2.3 Guidelines

The DNL metric is recognized by the Department of Housing and Urban Development, USEPA, FAA, and DoD as an appropriate metric for estimating the degree of nuisance or annoyance that increased noise levels would cause. Therefore, the DNL metric (i.e., CNEL in this document) is used here for evaluating effects from both continuous and impulsive noise sources, as follows:

- A-weighted DNL (ADNL and also CNEL) for aircraft events and small arms firing; and

- C-weighted DNL (CDNL and also C-weighted CNEL) for large-caliber weapons firing and explosives detonation.

Noise models are used to calculate existing CNELs and to portray the modeled values as contours (i.e., lines on a map that join points of equal noise level). The analyses are conducted in accordance with the following DoD guidance.

U.S. Navy Guidance

In the early 1970s, DoD established the AICUZ Program in response to growing incompatible urban development around military airfields. This program provides land use guidelines for use by local governments with the goal of achieving compatible civilian land use patterns and activities in the vicinity of military airfields. In June 1980, the Federal Interagency Committee on Urban Noise published guidelines relating DNL to compatible land uses. This committee was composed of representatives of DoD, the Department of Transportation (DOT), the Department of Housing and Urban Development, USEPA, and the Veterans Administration.

The DoN established the Range Air Installations Compatible Use Zones (RAICUZ) procedures (OPNAVINST 3550.1, August 7, 1998) to protect public health, safety, and welfare, and to prevent encroachment from degrading the operational capability of air-to-ground ranges (U.S. Navy 1998). The RAICUZ program includes range safety and noise analyses, and provides land use recommendations that aim to ensure compatibility with range safety zones (i.e., areas of varying levels of safety hazard concerns due to potential weapons impact) and noise levels associated with the military range activities. The DoN defines three noise zones based on the ADNL metric and provides general action to be considered with respect to land use compatibility within these noise zones (Table 3.2-2).

Table 3.2-2
DoN Land Use Compatible Guidelines

Noise Zone	ADNL (dBA)	Land Use Compatibility
I	< 65	An area of minimal impact where sound attenuation is not recommended.
II	65–75	An area of moderate impact where some land use noise controls are needed.
III	75 or above	The most severely impacted area where the greatest degree of land use noise control is needed.

Source: OPNAVINST 3550.1, August 7, 1998.

The DoN's noise criteria are used in this EIS/LEIS to evaluate the effects of noise from aircraft events. The DoN guidance does not specifically address small arms firing. However, as the noise from small arms firing is best evaluated using the ADNL metric, the DoN's noise criteria also are used to evaluate the effects of small arms firing noise.

The DoN guidance also directs the use of the DoD's Blast Noise Prediction (BNOISE) program to establish munitions blast noise contours. As discussed below, BNOISE is used here to predict the CDNLs for large-caliber weapon firing and explosive detonation noise.

U.S. Marine Corps Guidance

Although there is no formal Marine Corps order or DoN instruction on ground training noise, Headquarters Marine Corps issued the memorandum Ground Training Noise Guidance for Marine Corps Installations (U.S. Navy 2005b), stating that CDNL is the appropriate noise metric to represent the effects of noise from Marine Corps ground training ranges. In addition, Marine Corps installations are required to evaluate

their noise and other range impacts on land use and present the findings to the public. This is done through the completion of Range Compatible Use Zone studies.

U.S. Army Guidance

Army Regulation 200-1 (Environmental Protection and Enhancement) Chapter 14 (Operational Noise) provides the guidance for evaluating ground training noise at Army installations. The Army guidelines establish noise zones and associated land use compatibility recommendations for ADNL and CDNL noise values. Table 3.2-3 presents that information. Noise-sensitive land uses typically include residential areas, schools, hospitals, and churches.

Table 3.2-3
Army Land Use Planning Guides

Noise Zone	Aviation ADNL (dBA)	Impulsive CDNL (dBC)	Land Use Recommendation
I	< 65	< 62	Generally acceptable with any residential or noise-sensitive uses.
II	65–75	62–70	Normally not recommended with residential or noise-sensitive uses.
III	>75	>70	Not recommended with any residential or noise-sensitive uses.

Source: U.S. Army Center for Health Promotion and Preventative Medicine (USACHPPM), 2005.

The Army's impulsive CDNL noise criteria are used in this EIS/LEIS to evaluate the effects of noise from large-caliber weapons firing and detonation of explosives.

City of Ridgecrest

The noise element of the City of Ridgecrest General Plan identifies major noise sources and contains policies intended to protect the community from exposure to excessive noise levels. The AICUZ Study's military influence area and land use compatibility recommendations have been incorporated into the 2010 Ridgecrest General Plan Update. City planners maintain the Military Influence Area (MIA) overlay as a planning tool to ensure future land development compatibility with NAWSCL mission activities.

3.2.4 Existing Conditions

Ambient background noise levels in the vicinity of NAWSCL are typical of a rural environment. The communities around NAWSCL are relatively quiet, but aircraft flying overhead, on-installation range activities, and traffic along main transportation routes add noise intermittently. This section addresses existing noise conditions at NAWSCL Armitage Airfield and at the North and South Ranges.

Armitage Airfield

The issue of incompatible land use adjacent to military air installations is a growing concern for the DoN. The increase of incompatible land uses and development around airfields, generally referred to as encroachment, has the potential to seriously constrain an installation's mission capability in aircraft events. DoD and the DoN implemented the AICUZ program to promote compatible land use at military installations and in surrounding communities, and to protect the health, safety, and welfare of civilians and military personnel in areas adjacent to military airfields.

An initial AICUZ Study was prepared and approved for NAWSCL Armitage Airfield in 1977 and updated in 2007 (U.S. Navy 2007a). The 2007 AICUZ Study analyzed the 2004 EIS preferred alternative as the baseline condition and adopted consolidated departure tracks west of Jacks Ranch Road as the projected Armitage Airfield flight operation scenario. The 2007 AICUZ Study analyzed current and projected noise impacts and flight safety considerations within the AICUZ Study footprint and for areas beyond the associated noise contours where mission-compatible land-use controls were considered necessary.

Since the 2007 AICUZ Study, NAWSCL has conducted several aircraft noise studies to analyze noise conditions around the airfield due to changes in aircraft events. These studies include a November 2008 noise study and an August 2009 noise study, both depicting noise contours around the airfield. A combined noise study report was completed in April 2010 and was further used as the basis for the 2011 AICUZ Update, approved and published in April 2011 (U.S. Navy 2011f).

The current existing condition for NAWSCL Armitage Airfield is defined as 15-year historical average activities for the airfield, with 2006 activities for the Baker Range. Most modeling parameters for the existing condition were initially based on the 2007 AICUZ Study, with updated flight tracks and flight profiles based on 2009 site visits and upon analysis of radar data. Flight tracks were dispersed within the departure corridor to more accurately model the variability of Visual Flight Rules (VFR) departures.

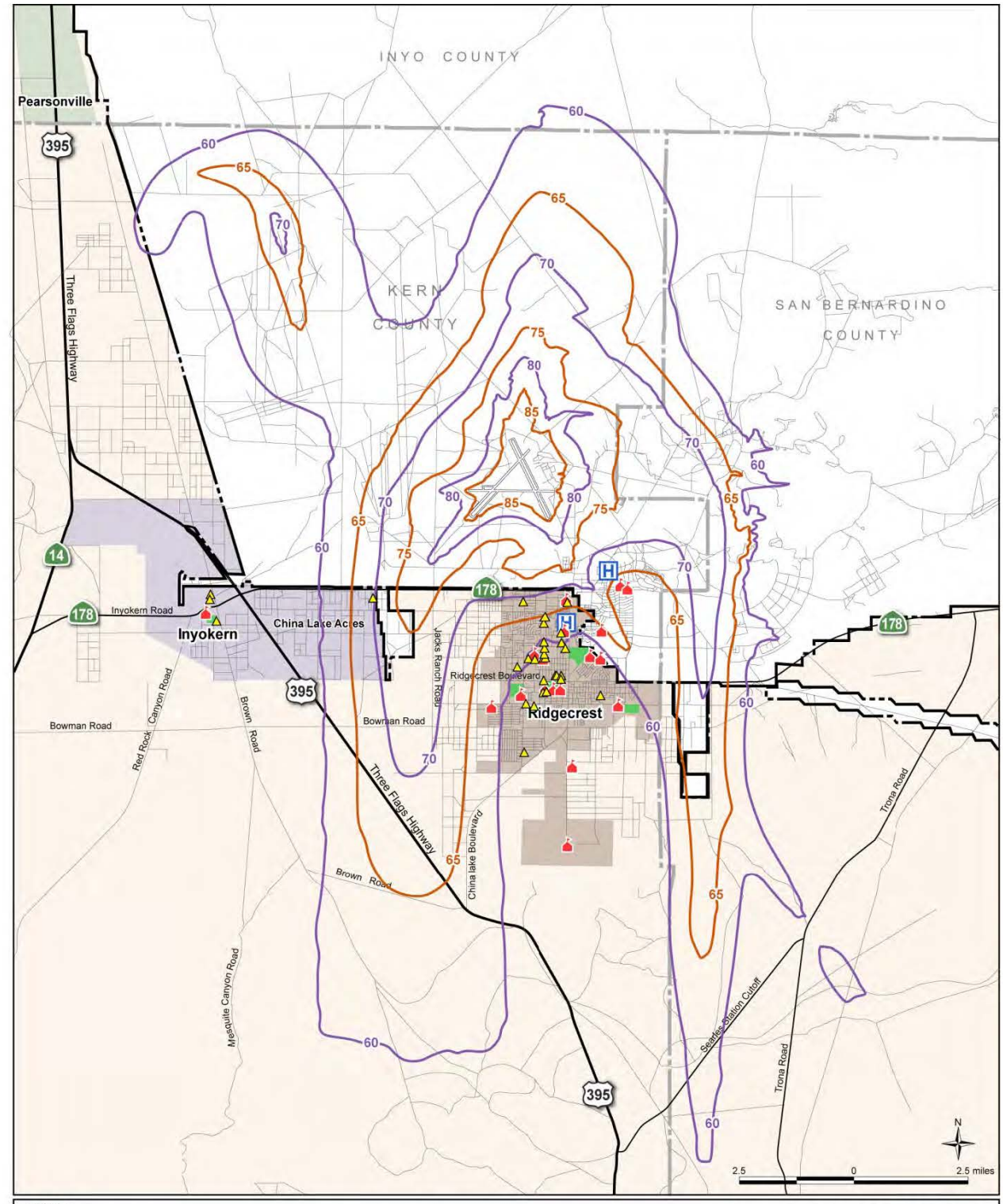
The 2011 AICUZ Update highlights the opportunity to proactively manage surrounding land use development to meet the growth needs of local communities and protect the sustainability of the NAWSCL mission through the implementation and maintenance of compatible land use policies and practices. It offers recommended strategies and planning tools that can be applied by local agencies to promote compatible land use development before encroachment becomes a serious problem at NAWSCL. The 2011 AICUZ Update examines various planning parameters related to aircraft events, noise, and safety, and provides an analysis of land use compatibility for both on- and off-installation areas (U.S. Navy 2011f).

Figure 3.2-2 shows the 60 dBA through 85 dBA combined CNEL contours for the existing noise condition. The noise contours at or greater than 80 dBA are within the Installation around the runways and no on-installation sensitive receptors are located within the 80-dBA contours. The airfield departure activity creates off-installation contours of 60, 65, 70, and 75 dBA CNEL. Within Noise Zone II (between 65 dBA and 74 dBA [see Table 3.2-2]) the following occurs:

- The 65-dBA CNEL contour extends approximately 4 miles (6.4 kilometers) south of the NAWSCL boundary into the communities of China Lake Acres and Ridgecrest;
- The 70-dBA CNEL contour also extends off-installation slightly into the communities of China Lake Acres and Ridgecrest;
- The off-installation 75-dBA CNEL contour for Noise Zone III extends to Drummond Avenue and Jacks Ranch Road along departure tracks.

Certain noise-sensitive receptors such as schools, hospitals, churches, and populations within Noise Zone II were identified as below:

- Family Bible Church
- Immanuel Southern Baptist Church
- Inyokern Church of Christ



Existing NAWSCL Aircraft Noise Contours

Figure 3.2-2

- McIntire Hospital (Installation clinic)
- Richmond Elementary School
- Immanuel Christian School
- Groves Elementary School (no longer used as a school)
- Approximately 6,000 residents (see Table 3.2-4).

Therefore, off-installation effects from ongoing aircraft flight events exceed noise compatibility thresholds at these noise-sensitive receptors in the communities of China Lake Acres and Ridgecrest. Historically, limited noise complaints are received from these areas; however, the DoN considers these noise impacts significant. The 2011 AICUZ Update provides land-use compatibility recommendations based on airfield and aircraft operational noise effects on the NAWSCL area. Table 3.2-4 summarized the acreages within each noise contour band both on- and off-installation.

Table 3.2-4
Area and Population under Existing Condition Noise Contours

CNEL (dBA)	Off-Installation Area (Acres)	On-Installation Area (Acres)	Total Area (Acres)	Off-Installation Population	On-Installation Population	Total Population
60-64	23,054	27,513	50,567	7,865	900	8,765
65-69	9,434	12,169	21,603	3,970	905	4,875
70-74	2,986	12,371	15,357	1,050	100	1,150
75-79	345	5,734	6,079	0	10	10
80-84	0	2,347	2,347	0	10	10

Noise Zones in Kern County
Per DoN recommendations, within Noise Zone III (greater than 75 dB CNEL) residential land use is considered incompatible. Other land uses such as Manufacturing, Retail Trade, and some Services are considered compatible if measures to achieve noise level reductions (NLR) are incorporated into the design and construction of buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low. Within Noise Zone II (between 65 dB CNEL and 74 dB CNEL), some land use noise controls are recommended. Controls include an NLR of 25 to 30 dB CNEL depending on noise exposure for residential and cultural/entertainment/recreation buildings. In areas of 70 to 74 dB CNEL noise exposure, residential land uses are strongly discouraged and a NLR of 30 dB CNEL is recommended if county authorities allow residential development. A NLR of 25 dB CNEL is recommended for service and office areas of manufacturing land uses.

Noise Zones in City of Ridgecrest
No Noise Zone III is predicted to occur in the City of Ridgecrest.

Noise Zone II areas in the City of Ridgecrest include those zoned as cultural/entertainment/recreation, manufacturing, residential, and services. Per the DoN land use compatibility guidelines, residential land use in this area is incompatible and is therefore discouraged. However, in the event that city authorities determine that additional residential development in this area should be allowed, it is recommended that measures to achieve an NLR of 30 dB CNEL in areas in the 70 to 74 dB CNEL noise range and an NLR of 25 dB CNEL in areas in the 65 to 69 dB CNEL noise range be incorporated into building codes and be made a condition of individual approvals.

For future new development, the City of Ridgecrest has adopted noise compatibility guidelines and established its own Maximum Allowable Noise Exposure to restrict land use development within Noise Zone II for various land use categories including residential, schools, hotels, and churches. In areas in the 66 to 70 dB of CNEL noise range, new construction or development of these sensitive land uses should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed insulation features have been included in the design. In the areas in the 71 to 75 dB of CNEL noise range, new residential construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Noise Zones in San Bernardino County

No Noise Zones II or III were predicted in the San Bernardino County area near NAWSCL; the residential land use in the area around NAWSCL is considered compatible.

Noise Zones on Installation

More than 99 percent of the land affected by noise exposure levels of 75 dB CNEL and above (Noise Zone III) occurs within NAWSCL, most of this on-installation land is classified as "not zoned" or designated for operations use.

Other on-installation land use designations within the 2011 AICUZ Update footprint include administration, community, housing, interim use, maintenance, medical, Research, Development, Test & Evaluation (RDT&E), recreation, supply, test/training, unplanned, and utilities. Military-owned land uses are compatible with the DoD guidelines; therefore, current land uses on the Installation are compatible with their respective noise exposure zones.

Land Use Management Plan

As discussed in the 2011 AICUZ Update, NAWSCL will implement the actions outlined below:

- Amend the NAWSCL CLUMP to incorporate AICUZ Update operational profiles, and noise conditions into existing land management practices, including the site approval process, environmental review process, and Capital Improvements Program.
- Maintain and enhance NAWSCL community information programs and AICUZ Study outreach efforts to address agency and public information needs.
- Continue the implementation of the NAWSCL noise complaint response program to address and respond to public inquiries regarding NAWSCL air events.
- Continue implementation of the NAWSCL aircraft noise abatement and aircrew education programs to minimize noise impacts on- and off-installation.

Recommended actions for City and County agencies include:

- Continue to provide CEQA notifications to NAWSCL for review and consideration of DoN comments on city and county discretionary land use actions, including General/Specific Plan amendments, Zone changes, Tract Maps, Parcel Maps, Specific Development Plans, and Conditional Use Permits.
- In coordination with NAWSCL, amend and adopt the existing Kern County Airport Land Use Compatibility Plan (ALUCP) – Military Aviation Section for NAWSCL to include specific criteria, policies, and maps for use in evaluating projects, and provide a copy of the amended ALUCP to Cal Trans Department of Aeronautics, School Districts, and Special Districts.

- The 2007 AICUZ Study's military influence area of interest and land use compatibility recommendations have been incorporated into the 2010 Ridgecrest General Plan Update. City and county planners are encouraged to maintain the military influence area as a valid planning tool to ensure future mission compatibility, as well as to consider the most recent AICUZ Study during plan updates. Salient components of the AICUZ Study should be added to the Military Sustainability Element of the Kern County General Plan and the proposed Indian Wells Valley Specific Plan. Planners are encouraged to develop and adopt specific policies and procedures to address compatible land uses (type, density, etc.) and air operations safety considerations (height obstructions, glare and smoke, electronic emissions, bird attractants, etc.), to identify appropriate densities of new residential development and minimize sensitive types of land use within the flight corridors and areas of increased risk. NAWSCL recommends city and county review and adjust as appropriate the military influence area of interest to meet their planning and management goals.

- Develop and implement a policy requiring a site-specific evaluation for any proposed General Plan Amendments or zoning changes that would create residential projects or increase allowable density of existing designated residential development in an area identified as impacted by noise or safety concerns, and require appropriate notification of potential aircraft noise and flight safety risk to realtors, buyers, sellers, and residents of land within the flight corridor areas of the military influence area.

- Create specific policies for the General/Specific Plan that address restrictions on the location of sensitive receptors, such as schools, day care centers, apartments, hospitals, nursing homes, and senior living facilities in relation to noise contours.

Ranges

Aircraft Flight Events

Subsonic Flight. According to the 2004 EIS (U.S. Navy 2004a) noise modeling results for range aircraft flight events and average flight-associated aircraft cruise time within each range at various altitudes, the CNEL levels at each studied range are well below the 65-dBA threshold. Table 3.2-5 shows the predicted noise-exposure levels for range flight events at each of the ranges. None of the range noise levels exceed 65 dBA off-installation. Therefore, off-installation effects from ongoing subsonic range flight events fell well below established noise compatibility thresholds. Although the existing flight events would differ from the conditions modeled in the 2004 EIS, given the low predicted historical levels at each range, it is anticipated that current subsonic range flight events would be similar to those identified in the 2004 EIS.

Although CNEL levels for ranges are well below 65 dBA, noise from single events (aircraft overflights over public and private lands, in particular) can be quite loud and result in potential nuisance and/or startle effects that generate occasional noise complaints. NAWSCL currently has a noise complaint response program to address range aircraft operational noise complaints.

Supersonic Flight. The 2004 EIS also provides modeled cumulative CDNL noise levels along the supersonic flight track for combined annual supersonic events. The noise levels predicted outside of the Installation's boundary did not exceed 35 dBA, and are well below established noise compatibility thresholds, resulting in minimal noise impacts in terms of CDNL levels.

Since the 2004 EIS range noise modeling was conducted based on the aircraft types and flight radar data recorded in earlier years, the change in noise effects from recent and current upgraded aircraft models was not reflected in the 2004 EIS. Nevertheless, as shown in Figure 3.2-3, the reference single-event SELs for typical noisy jets are not substantially different. For instance, under the military power setting, when overflight occurs approximately 1,000 feet above the flight path, the new model of F-18 E/F only

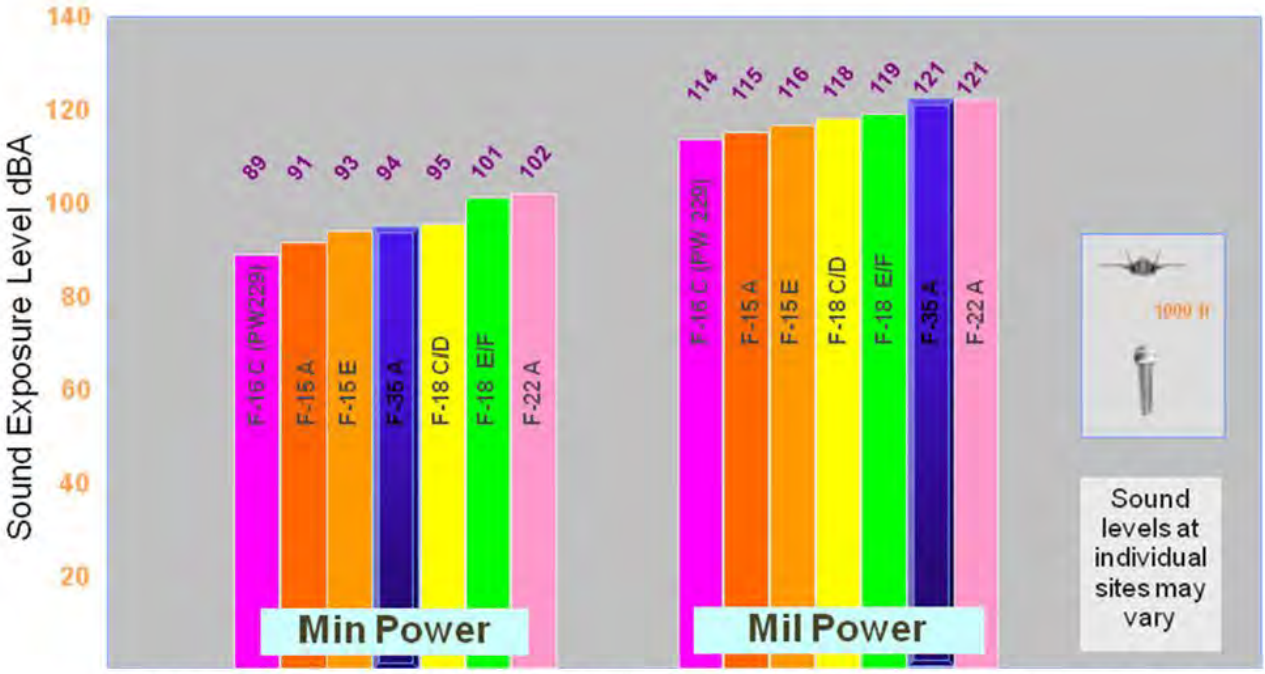
Table 3.2-5
2004 Condition CNEL
for Individual Ranges

Range	CNEL (dBA)
North	
Airport Lake	51
Baker North	<45
Baker South	54
Charlie North	56
Charlie South	54
Coso	<45
Coso Target Range	47
George	<45
Mainsite	<45
Propulsion Laboratory	<45
South	
Mojave B North	<45
Mojave B South	<45
Randsburg Wash	<45
Superior Valley	<45

Source: U.S. Navy 2004a.

generates approximately 1 dBA greater SEL compared to the older F-18 C/D model, and 2 dBA less SEL compared to the new F-35 Joint Strike Fighter to be deployed at NAWSCL. Since the noise difference is within 3 dBA with high engine power setting, the SELs generated from these noisy jets for a single event are comparable, and the differences are barely perceptible. Therefore, given that the subsonic and supersonic conditions described in the 2004 EIS were predicted to generate low noise levels in terms of cumulative CNEL (DNL) noise, it can be inferred that the 2011 range aircraft flight events would have a similar noise effect.

However, the single event SEL levels from infrequent supersonic aircraft overflights over public and private lands can be high and result in potentially significant, short duration noise and/or startle effects along supersonic flight tracks particularly during nighttime quiet hours. The supersonic overflights have high risk of generating occasional noise complaints. Individual response to noise levels varies and is influenced by many factors including activity the individual is engaged in at the time of the noise, general sensitivity to noise, time of day, loudness of the event, length of time an individual is exposed to a noise, predictability of noise, and average temperature. Noise complaints are received by NAWSCL Public Affairs via a designated hotline. During normal business hours, calls are answered and information is collected from the caller concerning the time, location, and description of the noise generating event. After normal business hours, the calls are logged and responded to the following business day. The complaint is reviewed by the R-2508 Complex Central Coordinating Facility and radar data is analyzed to determine if the complaint is the result of a deviation from standard procedures. When appropriate, the responsible flight squadron is notified. If a "call back" is requested by the individual submitting the complaint, Public Affairs will contact the individual to gather more information and to personally address any concerns of the caller. The NAWSCL Noise Hotline number is (760) 939-3511. The Public Affairs Office received 98



Min = minimum jet engine power settings anticipated in the mode of low speed cruise, approach, etc. that likely requires minimum engine power
Mil = military jet engine power settings with high engine power anticipated during takeoff and climb out

Figure 3.2-3
Predicted Single Event SEL at 1,000 Feet (305 meters) Under Flight Path

total complaints between 2009 and 2013 (Table 3.2-6). These complaints reflect the low-level flight, high noise, and supersonic flight complaints for the entire R-2508 Airspace Complex as compared to a specific military base or command event. These occasional noise complaints relating to flight over sensitive areas (small towns, airports, and recreation areas) can have a negative effect on the DoD/civilian community relationship. Moreover low-flying aircraft over national parks such as Death Valley National Park and wilderness areas is an extremely sensitive issue. Noise complaints in these areas gain national attention. In order to minimize potential noise effects from supersonic low-level flight over sensitive areas, aircrew must adhere to CFR Title 14 and DoD rules pertaining to supersonic operations, endangerment of private property, and annoyance to civilians. The particular areas of concern include:

- Overflight of national parks and wilderness areas
- Overflight of populated areas and the Owens Valley
- Overflight of private commercial activities.

As part of a coordinated effort to reduce the effects of noise on the community, NAWSCL participates in a variety of activities to increase public awareness and understanding of its mission. NAWSCL personnel regularly participate in project planning meetings in the City of Ridgecrest, as well as in other surrounding communities. In addition, when possible, the public is provided with advance notice of testing activities that may generate excessive noise. NAWSCL currently has a noise complaint response program to address aircraft operational noise complaints.

Table 3.2-6 Noise Complaints

Year	Total Number of Complaints	Barstow	Bishop	Bodfish	Cartago	Death Valley	Inyokern	Lake Isabella	Johannesburg/ Red Mountain	Keeler	Kernville	Lone Pine	Olancha	Pahrump	Ridgecrest	Tehachapi	Trona	Weldon
2009	34			1	3		1	10	3	7		2			1			6
2010	10			1		1		1		7								
2011	no data																	
2012	21	1						1			6	1	11			1		
2013	33		1		4				6	2	14		3	1	1		1	
Total	98	1	1	2	7	1	1	12	9	16	20	3	14	1	2	1	1	6

Munitions

The 2004 NAWSCL EIS provided a land range noise analysis using the BNOISE model to predict noise contours around each applicable range used for large weapon testing and GTT. According to the 2004 EIS modeling results, large-weapons firing and explosive detonation noise contours would not extend beyond the NAWSCL Installation boundary.

As described in Chapter 2 of this EIS/LEIS, the installation-wide range activities have changed since the 2004 EIS was published. Moreover, the munitions noise modeling results presented in the 2004 EIS were based on late 1990s weapon expenditure data and an early version of the BNOISE model. This EIS/LEIS updates the munitions noise modeling analysis, given the changes in weapon types and range conditions, the increase in air-to-ground and ground-to-ground weapon testing, and the change in evaluation tempo.

For large-caliber weapon firing and explosive detonations, modeling was used to develop installation-wide noise contours. For small arms firing, given the remote range area (C Range) where the majority of firing occurs (with no sensitive noise receptors) and the limited rounds of firing, it can be assumed that noise effects from small-arms firing is essentially masked by the large-caliber weapons testing noise. Therefore, the existing land range weapons noise contours were only developed for large-weapons testing and explosives on the Installation.

Large-caliber weapons fire includes both explosive and nonexplosive projectile fire. When a large-caliber, live projectile is fired, there is impulsive noise both when the gun is fired and when the projectile hits the target area and explodes, as well as from the bow shock noise from the projectile. The bow shock is a large-amplitude compression wave that occurs in front of an object with supersonic motion. The firing of an inert projectile would not create an explosion when the projectile hits a target area; therefore, only the firing of the gun creates an impulsive noise and the bow shock noise from the projectile. Existing noise conditions were modeled based on the average annual number of rounds fired from 2007 through 2008, as described in the most recent *Range Complex Management Plan* (October 2011).

Given the dominant low-frequency component of large-caliber weapons firing and explosive detonation noise, the CDNLs on annual average conditions over typical 234-range working days were predicted using the DoD's large-caliber-weapon noise model – BNOISE2, Version 1.3.2003-07-03. BNOISE2 is a DoD-developed computer program that calculates and displays blast-noise-exposure contours resulting from specified activities involving large-caliber weapons and explosive charges. BNOISE2 considers the type of weapon and ammunition, the number of rounds fired, firing time (day or night), range attributes, weather, and which direction the weapon is pointing. The underlying data for the model are based on actual measurements and experimental data.

The model used for this EIS/LEIS accounts for weather and the varying behavior of sound intensity propagating over various land surfaces (such as concrete versus desert, water, forests, etc.). Since the majority of range lands is desert, the desert option was selected for the modeling. Figure 3.2-4 displays the estimated CDNL contours for both large-caliber weapon firing and explosive detonation noise from average range conditions from 2007 and 2008. Figure 3.2-5 shows the modeled firing and target locations. Detailed modeling input data and assumptions used are presented in Appendix F.

The contours of Figure 3.2-4 indicate the following:

- CDNL noise levels of or greater than 70 dBC (Noise Zone III in Table 3.2-3) from large-weapon firing and explosives detonation are confined within NAWSCL, except in the areas south of Main Magazine and Ordnance Test and Evaluation Ranges where Noise Zone III extends slightly beyond the Installation. However, no off-installation noise sensitive land uses such as residences, schools, hospitals, or churches are located within Noise Zone III.

- CDNL noise levels between 62 dBC and 70 dBC (within Noise Zone II) extend slightly to land to the south and southeast of Main Magazine and Ordnance Test and Evaluation ranges, and the south of Superior Valley Range. However, no off-installation noise sensitive land uses such as residences, schools, hospitals, or churches are located within Noise Zone II.

Vibration

- In general, low-frequency, impulsive sound pressure generated by the detonation of explosive charges or large-caliber weapons firing can cause structures to vibrate. A low-altitude aircraft supersonic fly-over event could also result in a sonic boom that could potentially cause the rattling of structures under the flight track. Occupants often perceive this vibration as the rattling of loose windows and objects on shelves, and sometimes the building itself. There are two types of vibration: vibration that is transmitted through the ground (i.e., ground-borne vibration) and vibration that is transmitted through the air (i.e., airborne vibration). Several methods can be used to quantify the amplitude or extent of vibrations.

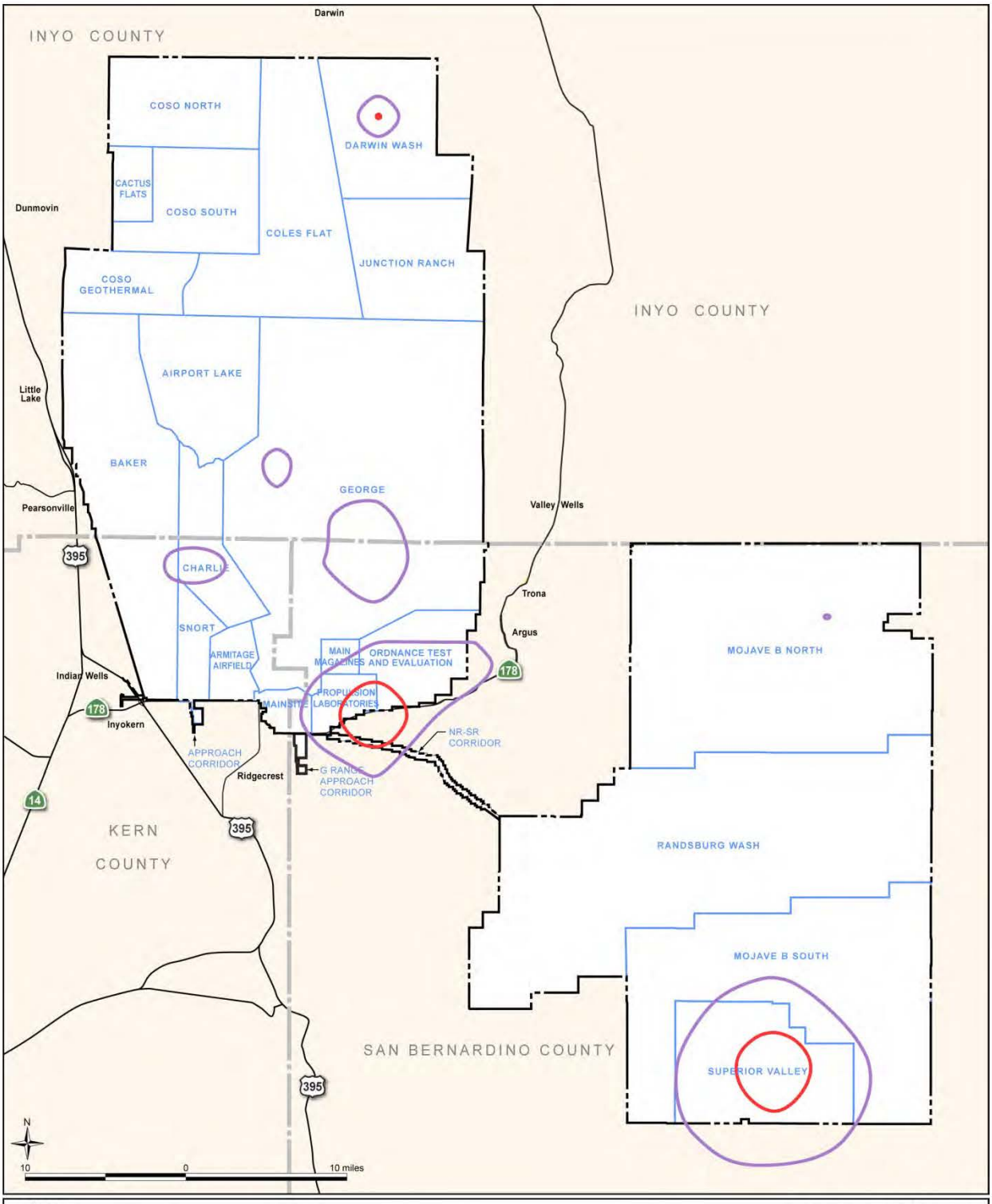
Ground-Borne Vibration

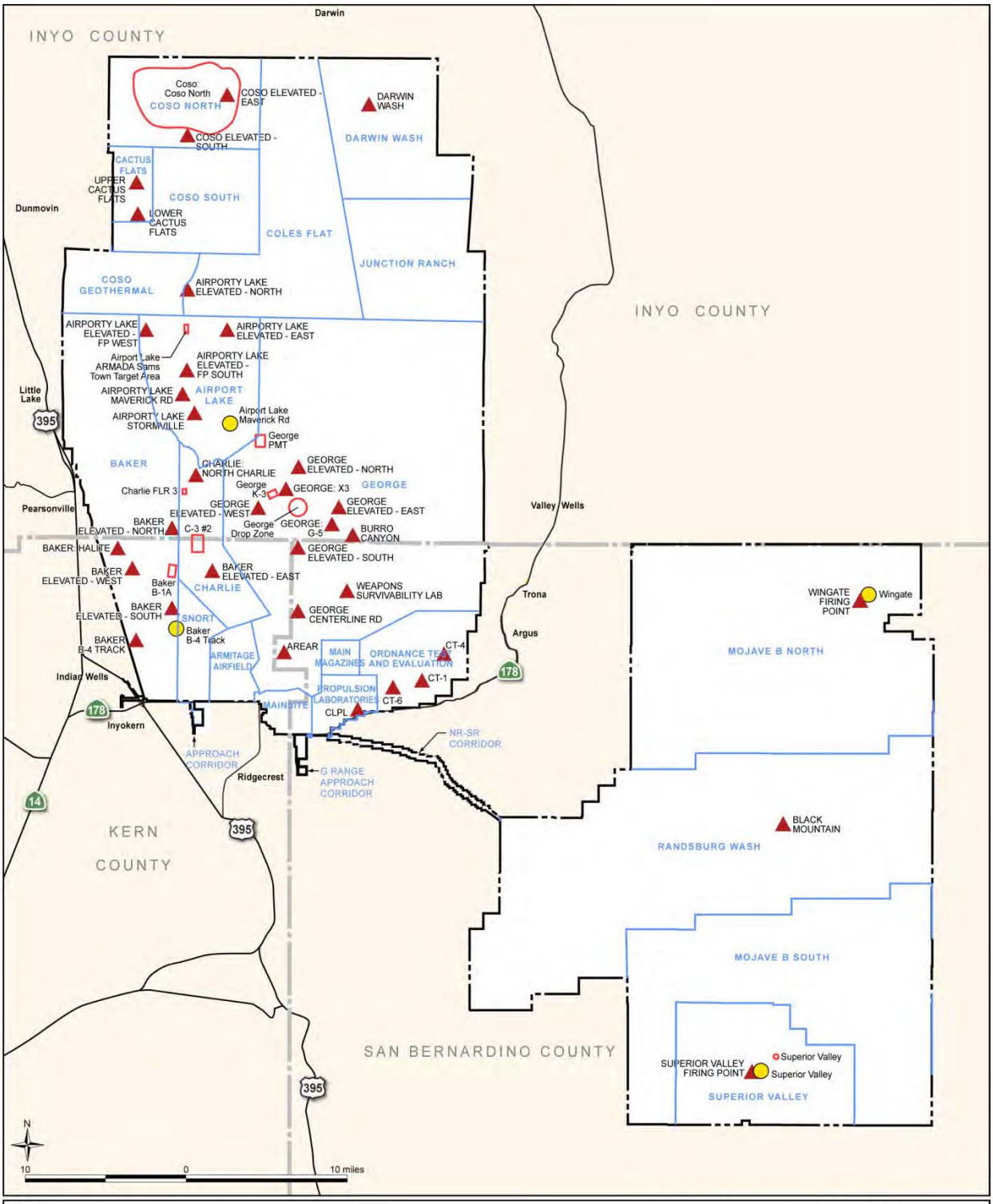
- Ground-borne vibration originates from an explosive detonation that radiates vibration energy into the soil. The face of the nearest foundation or underground building wall responds to the ground-borne vibration and propagates the waves throughout the building. The resulting ground-borne vibration is a function of the magnitude of the energy source, distance from the source, specific characteristics of the transmitting media (rock/soil), and response characteristics of the structural element (building).

Vibration studies of coal mine detonations indicate that ground-borne vibration dominates structure vibration in the near field, while airborne vibration dominates at greater distances. For example, for a 100-pound charge, the ground-borne vibration is the dominant cause of building vibration if the building is located less than 500 feet (152.4 meters) from the detonation point. At distances greater than 500 feet (152.4 meters), the airborne sound wave is the dominant cause of the vibration (USACHPPM 2005). Since the explosive detonation positions around the Installation are relatively far from the Installation boundary (e.g., greater than 500 feet [152.4 meters] away), it is anticipated that ground-borne vibrations from range activities are negligible at off-installation buildings.

Airborne Vibration

Most of the studies of airborne vibration events use sonic booms as the source of vibration. A sonic boom is an impulsive noise similar to the initial crack of thunder during a storm. The boom noise is caused when an object moves faster than the speed of sound. The vibration resulting from open area explosive detonation events, large-caliber weapon firing, and/or a low-altitude aircraft fly-over at supersonic speed is similar to the vibration from sonic booms. This EIS/LEIS uses the change, or peak, in pressure caused


Darwin
INYO COUNTY
COSO NORTH
DARWIN WASH
CACTUS FLATS
COSO SOUTH
COLES FLAT
JUNCTION RANCH
Dunmovin
COSO GEOTHERMAL
INYO COUNTY
AIRPORT LAKE
Little Lake
BAKER
GEORGE
Pearsonville
Valley Wells
395
CHARLIE
Trona
SNORT
Argus
ARMITAGE AIRFIELD
MAIN MAGAZINES
ORDNANCE TEST AND EVALUATION
MOJAVE B NORTH
178
Indian Wells
PROPULSION LABORATORIES
MAINSITE
178
Inyokern
NR-SR CORRIDOR
APPROACH CORRIDOR
Ridgecrest
G RANGE APPROACH CORRIDOR
14
KERN COUNTY
395
RANDSBURG WASH
MOJAVE B SOUTH
SAN BERNARDINO COUNTY
SUPERIOR VALLEY
395
N
10
0
10 miles
LEGEND
Land Management Unit
Installation Boundary
CDNL Contour (dBC)
Baseline
62
70
CHINALAKEEIS/076
Existing NAWSCL
Large Weapon Noise Contours
Figure 3.2-4



Modeled Existing NAWSCL Large Weapon Firing and Target Positions

Figure 3.2-5

by a sonic boom, measured in terms of pounds per square foot (psf), for measuring an aircraft-flight-generated sonic boom. The magnitude of the sonic boom is referred to as the peak overpressure, and is considered the basic descriptor of sonic boom. The actual magnitude of most sonic booms generated by military aircraft is only a few psf. It should be noted that absolute pressure at sea level is 2,117 psf or 14.7 pounds per square inch (psi).

- For a single-event assessment of a sonic boom, no standard metric or guidelines are established. Therefore, the findings described below are primarily for NEPA disclosure purposes.

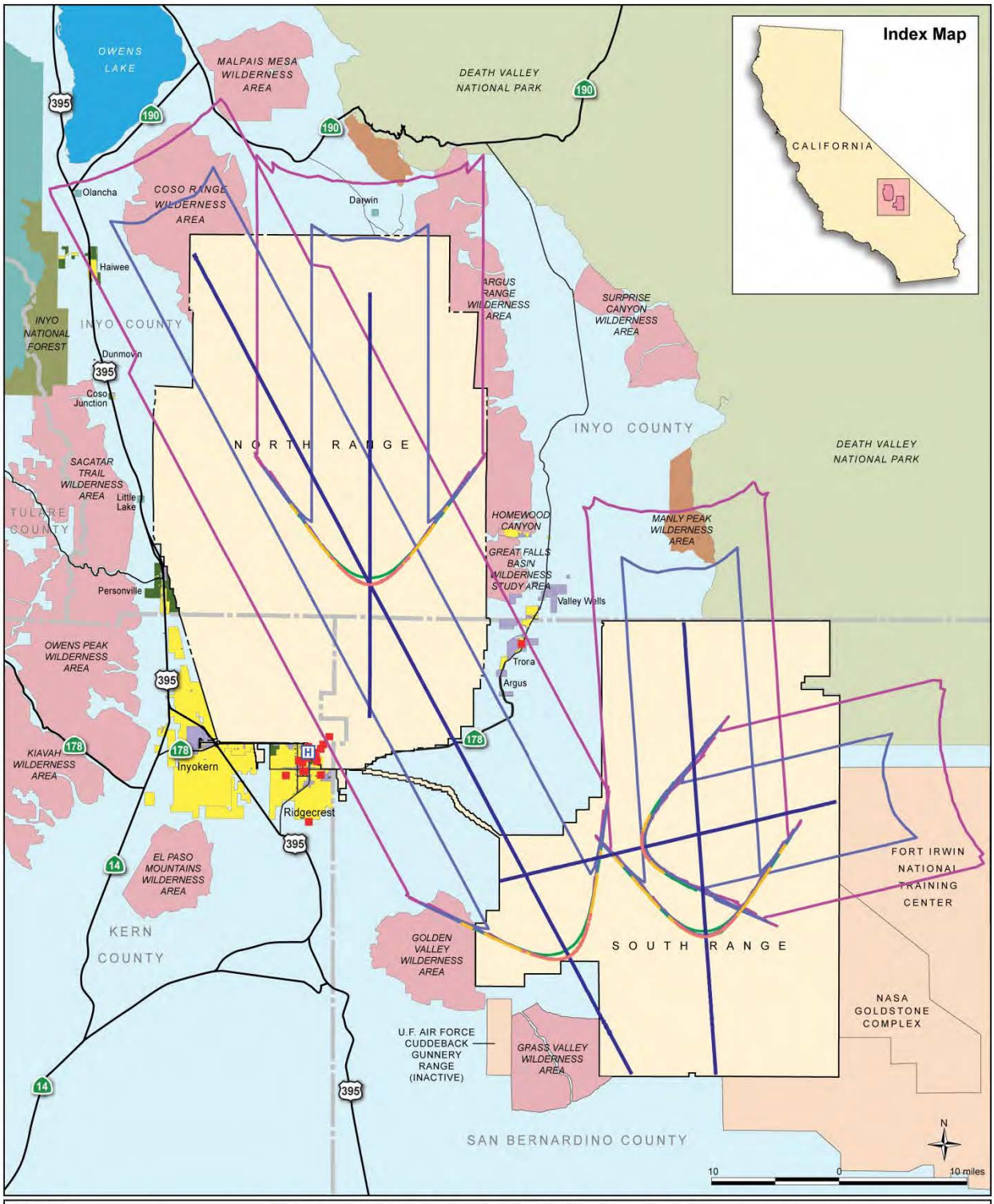
Because of the great distance from weapons testing or explosive detonation sites to off-installation sensitive structures, large-caliber weapons firing or explosive detonation events have minimal airborne vibration effects around the Installation. However, aircraft supersonic flight events within the North and South Ranges have potential to cause complaints from individuals in the vicinity of aircraft flight tracks.

Supersonic aircraft flight-event-associated sonic boom effects were studied in the 2004 EIS along various flight tracks within the North and South Ranges. As discussed previously, the cumulative noise levels predicted in the 2004 EIS outside of the Installation's boundary did not exceed 35 dBA, and are well below established noise compatibility thresholds, resulting in minimal cumulative noise impacts. However, supersonic events do create a noticeable change in overpressure, which can create a startling effect to areas on- and off-installation.

A sonic boom event is generally of short duration (1 to 2 seconds), and the potential for noticeable changes in overpressure cannot be addressed using the cumulative CNEL/CDNL metric. Therefore, other metrics are used in this EIS/LEIS to describe supersonic flight activity impact despite the lack of guidelines for addressing sonic boom events resulting in potential vibration impacts.

In the 2004 EIS, flight overpressure conditions for typical NAWSCL supersonic flight events were predicted along several authorized supersonic flight tracks using the PCBoom3 model. These predicted flight paths are representative only, and supersonic flight operations are authorized anywhere within R-2505 and R-2524 airspace. In the analysis it was determined that the peak overpressures occur in a very small focus boom area along a flight track centerline (less than 1,000 square feet [93 square meters]) with overpressure levels ranging from 6 to 11 psf in the area (Figure 3.2-6). Within these focus sonic boom areas, the potential damage effects are primarily cosmetic in nature such as cracking of plaster elements, breaking of glass windowpanes, extending preexisting cracks, etc. and they do not degrade the structural integrity of a building. However, given the small size of a focus boom area, these areas essentially remained within the NAWSCL property. Beyond the NAWSCL boundary, the overpressure levels were predicted to be 3 psf or lower and they would cause minimal possibility of cosmetic damage.

Given similar SEL levels among various large jets, it is anticipated that, under existing conditions, periodic supersonic flights resulting in event airborne vibration impacts would be similar to those studied in the 2004 EIS with minimal impacts on potential structural damage to off-installation properties.



F/A-18 E/F Supersonic Flight Overpressure along Four Representative Flight Tracks

Figure 3.2-6

3.3 AIR QUALITY

3.3.1 Region of Influence

The ROI for air quality analysis is both regional, the combined area of the air basins in which NAWSCL is located, and localized, a specific area where local concentrations of pollutant emissions sources are located in proximity to sensitive air quality receptors.

The ROI for air quality varies according to the type of air pollutant. Primary pollutants, such as carbon monoxide (CO), have a localized ROI that is generally limited to less than 2,000 feet (610 meters) from the source of emissions. However, due to secondary pollutant formation, the ROI for other pollutants (e.g., ozone) is generally larger and includes portions of the air basins that include and surround NAWSCL.

3.3.2 Definition of Resource

Air quality is defined by atmospheric concentration of specific pollutants with respect to the health and welfare of humans at a particular geographic location. The ambient air quality levels measured at a particular location are determined by the interactions of emissions, meteorology, and chemistry. Emission considerations include the types, amounts, and locations of pollutants emitted into the atmosphere. Meteorological considerations include wind and precipitation patterns affecting the distribution, dilution, and removal of pollutant emissions. Chemical reactions can transform pollutant emissions into other chemical substances. Ambient air quality data are generally reported as a mass per unit volume (e.g., micrograms per cubic meter of air) or as a volume fraction (e.g., parts per million [ppm] by volume).

Air pollutants are any substances, natural or artificial, capable of being airborne that, in high enough concentrations, harm humans, animals, vegetation, or materials. Sources of pollutants include the combustion of fossil fuels from transportation sources and residential, industrial, and commercial facilities, and the generation of particulate matter (PM) from the disturbance of soil. In the presence of sunlight, some air pollutants in combination can undergo or trigger chemical reactions to form by-product pollutants such as ground-level ozone.

Six major pollutants of concern, or “criteria pollutants,” were identified by USEPA: CO, sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone, PM, and lead. PM is divided into two separate standards: inhalable particulates, equal to or smaller than 10 microns in diameter (PM_{10}), and fine particulates, equal to or smaller than 2.5 microns in diameter ($PM_{2.5}$).

Air pollutants are often characterized as being primary or secondary pollutants. Primary pollutants are those emitted directly into the atmosphere, such as CO, SO_2, lead particulates, and hydrogen sulfide. Secondary pollutants, such as ozone, are those formed through atmospheric chemical reactions of primary pollutants with conditions such as temperature, humidity, and the intensity of ultraviolet light. Compounds that react to form secondary pollutants often are referred to as pollutant precursors. Ozone precursors fall into two broad groups of chemicals: nitrogen oxides (NO_X) and volatile organic compounds (VOC).

Some air pollutants occur as primary and secondary pollutants. PM_{10} and $PM_{2.5}$ are generated as primary pollutants by various mechanical or combustion processes, and as secondary pollutants through chemical reactions or by gaseous pollutants condensing into fine aerosols.

Pollutant emissions refer to the amount (usually stated as a weight) of one or more specific compounds introduced into the atmosphere by a source or group of sources. Most pollutant emissions data are presented as emission rates. Typical measurement units for emission rates on a time basis are pounds per hour, pounds per day, or tons per year. Typical measurement units for emission rates on a source activity basis are pounds per thousand gallons of fuel burned, pounds per ton of material processed, and grams per vehicle mile of travel.

Greenhouse Gases/Climate Change

In addition to criteria pollutants, which are hazardous to human health, natural processes and human activities produce greenhouse gases (GHGs), which absorb and emit thermal infrared radiation and trap heat in the atmosphere. The accumulation of GHGs in the atmosphere regulates Earth's temperature. Scientific evidence indicates a trend of increasing global temperature over the past century due to an increase in GHGs.

Climate change associated with global warming is predicted to produce negative environmental, economic, and social consequences across the globe. Recent observed changes include shrinking glaciers, thawing permafrost, a lengthened growing season, and shifts in plant and animal ranges (IPCC 2007). Predictions of long-term negative environmental impacts due to global warming include sea level rise; changing weather patterns with increases in the severity of storms and droughts; changes to local and regional ecosystems, including the potential loss of species; and a significant reduction in winter snow pack. In California, predictions of these effects include exacerbation of air quality problems; a reduction in municipal water supply from the Sierra Nevada snowpack; a rise in sea level that would displace coastal businesses and residences; damage to marine and terrestrial ecosystems; and an increase in the incidence of infectious diseases, asthma, and other human health problems (CalEPA 2006).

Aside from water vapor, a naturally occurring GHG that accounts for the largest percentage of the greenhouse effect, the most common GHGs emitted from natural processes and human activities are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide. Examples of GHGs created and emitted primarily through human activities include fluorinated gases (hydrofluorocarbons and perfluorocarbons) and sulfur hexafluoride. Each GHG is assigned a global warming potential (GWP). The GWP is the ability of a gas or aerosol to trap heat in the atmosphere. The GWP rating system is standardized to CO_2, which has a value of 1. For example, CH_4 has a GWP of 21, which means that it has a global warming effect 21 times greater than CO_2 on an equal-mass basis. To simplify analyses, total GHG emissions from a source are often expressed as a CO_2 equivalent (CO_2e). The CO_2e is calculated by multiplying the emission of each GHG by its GWP and adding the results together to produce a single, combined emission rate representing all GHGs.

Federal agencies are, on a national scale, addressing emissions of GHGs by reductions mandated in federal laws and Executive Orders (EOs), most recently EO 13423 and 13514. Several states have promulgated laws as a means to reduce statewide levels of GHG emissions. In particular, the California Global Warming Solutions Act of 2006 directs California to reduce statewide GHG emissions to 1990 levels by the year 2020. In addition, groups of states (such as the Western Climate Initiative) have formed regionally based collectives to jointly address GHG pollutants.

In an effort to reduce energy consumption, reduce dependence on petroleum, and increase the use of renewable energy resources in accordance with the goals set by EOs 13423 and 13514, and the Energy Policy Act of 2005, the DoN and United States Marine Corps have implemented a number of renewable energy projects (NAVFAC SW 2006). The types of projects currently in operation within the Naval Facilities Engineering Command (NAVFAC) Southwest region include thermal and photovoltaic solar systems, geothermal power plants, and wind generators. The military also purchases one-half of the

biodiesel fuel sold in California. The DoN continues to promote and install renewable energy projects within the NAVFAC Southwest region.

The potential effects of proposed GHG emissions are global and cumulative impacts, as individual sources of GHG emissions are not large enough to have an appreciable effect on climate change. Therefore, the impact of proposed GHG emissions to climate change is discussed in the context of cumulative impacts in Section 4.3 of this EIS/LEIS.

3.3.3 Regulatory Framework

3.3.3.1 Ambient Air Quality Standards

National Ambient Air Quality Standards (NAAQS) for the criteria pollutants were established by the federal Clean Air Act (CAA) of 1970 (as amended in 1977 and 1990). A criteria pollutant is defined as any air pollutant for which there is an established NAAQS. NAAQS represent the maximum levels of air pollution considered safe to protect public health and welfare. NAAQS are based on evidence of acute and chronic health effects.

Initially, NAAQS were established for six criteria pollutants of concern: ozone, CO, NO_2, SO_2, lead, and PM. More recently, PM was divided into two separate standards: PM_{10} and $PM_{2.5}$. The criteria pollutants are described in further detail below.

Ozone
Ozone is a colorless, odorless gas that primarily exists in the upper atmosphere (stratosphere) as the ozone layer and in the lower atmosphere (troposphere) as a pollutant. Ozone is a principal cause of lung and eye irritation in the urban environment. Ozone is the principal component of smog, which is formed in the troposphere through a series of reactions involving VOCs and NO_X in the presence of sunlight. Therefore, VOC and NO_X are precursors of ozone. NO_X includes various combinations of nitrogen and oxygen, including nitrogen oxide, NO_2, and nitrogen trioxide. VOC and NO_X emissions are both considered critical in ozone formation. Control strategies for ozone have focused on reducing these emissions from vehicles, industrial processes using solvents and coatings, and consumer products. Significant ozone concentrations are normally produced only in the summer, when weather conditions are favorable for ozone formation.

Carbon Monoxide
CO is a colorless and odorless gas that, in the urban environment, is associated primarily with the incomplete combustion of fossil fuels in motor vehicles. Relatively high concentrations are typically found near crowded intersections and along heavily used roadways carrying slow-moving traffic. Even under the most severe meteorological and traffic conditions, high concentrations of CO are limited to locations within a relatively short distance (300 to 600 feet [91 to 183 meters]) of heavily traveled roadways. Overall, CO emissions are decreasing because of the Federal Motor Vehicle Control Program, which has mandated increasingly lower emission levels for vehicles manufactured since 1973. CO concentrations are typically higher in the winter; therefore, California has required the use of oxygenated gasoline in the winter months to reduce CO emissions.

Nitrogen Dioxide
NO_2 is a gas and a product of the combustion of fossil fuels generated from vehicles and stationary sources, such as power plants and boilers. NO_2 can cause lung damage. NO_2 is also a type of NO_X and contributes to the formation of ozone and particulate matter.

Sulfur Dioxide

SO_2 is a gas and the product of the combustion of fossil fuels, with the primary source being power plants and heavy industry that use coal or oil as fuel. SO_2 is also a product of diesel engine emissions. The human health effects of SO_2 include lung disease and breathing problems for asthmatics. SO_2 in the atmosphere contributes to the formation of acid rain.

Lead

Lead is a highly toxic metal that may cause a range of human health effects. Lead anti-knock additives in gasoline represented a major source of lead emissions to the atmosphere. However, lead emissions have significantly decreased due to the near elimination of leaded gasoline use. Lead-based paint, banned or limited by USEPA in the 1980s, is a health hazard when deteriorating (peeling, chipping, or cracking) or altered (scraped, sanded, or heated), generating lead dust. Lead may also be present in very small quantities in initiator/detonator charges and (less commonly) as an additive in certain classes of propellants.

Particulate Matter

PM is a complex mixture of extremely small particles and liquid droplets. PM is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. Natural sources of particulates include windblown dust and ocean spray. Some particles are emitted directly into the atmosphere. Others, referred to as secondary particles, result from gases that are transformed into particles through physical and chemical processes in the atmosphere.

The size of PM is directly linked to the potential for causing health problems. USEPA is concerned about particles that are 10 micrometers in diameter or smaller, because those are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. Health studies have shown a significant association between exposure to PM and premature death. Other important effects include aggravation of respiratory and cardiovascular disease, lung disease, decreased lung function, asthma attacks, and certain cardiovascular problems such as heart attacks and irregular heartbeat (USEPA 2007). Individuals particularly sensitive to fine particle exposure are older adults, people with heart and lung disease, and children. USEPA groups PM into two categories: coarse PM (or PM_{10}) and fine PM (or $PM_{2.5}$), as described below.

PM_{10}, or inhalable coarse particles such as those found near roadways and dusty industries, are smaller than 10 microns (one millionth of a meter) in diameter. Sources of PM_{10} include crushing or grinding operations, and dust from paved or unpaved roads. Control of PM_{10} is primarily achieved through the control of dust at construction and industrial sites, the cleaning of paved roads, and the wetting or paving of frequently used unpaved roads.

PM_{10} includes the subgroup of finer particles, such as those found in smoke and haze, with an aerodynamic diameter of 2.5 microns or smaller. These finer $PM_{2.5}$ particles pose an increased health risk because they can deposit deep in the lungs and contain substances that are particularly harmful to human health. Sources of fine particles include all types of combustion activities (motor vehicles, power plants, wood burning, etc.) and certain industrial processes. $PM_{2.5}$ is the major cause of reduced visibility (haze) in California. Control of $PM_{2.5}$ in California is primarily achieved through the regulation of emission sources; these regulations include the Clean Air Visibility Rule for stationary sources, 2004 Clean Air Nonroad Diesel Rule, Tier 2 Vehicle Emission Standards and Diesel Fuel Sulfur Program, and the California Air Resources Board (CARB) Goods Movement Reduction Plan and Air Toxic Control Measures.

Table 3.3-1 contains the current NAAQS for the criteria air pollutants. Hydrogen sulfide (H_2S), sulfates (SO_4), visibility reducing particles, and vinyl chloride are not addressed in this analysis, as negligible to no emissions of these pollutants would be generated by the Proposed Action.

In addition to NAAQS, USEPA allows states to set state air quality standards that are more stringent than NAAQS based on a state's air quality. California has established California Ambient Air Quality Standards (CAAQS) for most of the criteria pollutants and for some additional pollutants for which there are no NAAQS. Most of the CAAQS are based primarily on health effects data, but can reflect other considerations such as protection of crops or materials, or avoidance of nuisance conditions (e.g., odors).

3.3.3.2 Attainment Status with Ambient Air Quality Standards

Specific geographic areas or air basins are designated by USEPA as either "attainment" or "nonattainment" areas for the NAAQS for each criteria pollutant based on area air quality monitoring data. When an area is in violation of the NAAQS for a criteria pollutant, the federal CAA requires that the area be designated by USEPA as nonattainment for that pollutant. Federal nonattainment designations for ozone, CO, and PM_{10} include degrees of classifications such as "severe" nonattainment and "moderate" nonattainment, which indicate the severity of the air quality problem. In addition, violations of a CAAQS may result in the area being state designated as nonattainment for the CAAQS for that pollutant.

Areas that comply with federal and state air quality standards (i.e., NAAQS and CAAQS) are designated as "attainment" areas. Areas previously designated as nonattainment, but reclassified from nonattainment to attainment, are designated as "attainment/maintenance" areas. Areas that lack the monitoring data sufficient to signify status are designated as "unclassified", and are treated as attainment areas for regulatory purposes.

Regional air quality is typically defined by geographical areas, designated air basins, or planning areas. Attainment with the NAAQS and CAAQS in the portion of the air basins that NAWSCL lies within is determined from recent data from air quality monitoring stations in the region. NAWSCL is located within portions of three counties (Inyo, Kern, and San Bernardino) and within two air basins: the Great Basin Valleys Air Basin (GBVAB), which contains the Inyo County portion of the Installation, and the Mojave Desert Air Basin (MDAB), which contains the Kern County and San Bernardino County portions. The boundaries of the GBVAB and MDAB and their respective county lines are shown in Figure 3.3-1.

Portions of NAWSCL are located in six planning areas currently designated as either federal attainment, nonattainment, or attainment/maintenance for PM_{10}, and in attainment or unclassified for all other criteria pollutants. Table 3.3-2 lists the currently designated federal PM_{10} nonattainment or attainment/ maintenance areas at NAWSCL. Figure 3.3-2 provides a visual illustration of the PM_{10} nonattainment and attainment/maintenance areas at NAWSCL; the northeast corner of the North Range of NAWSCL, outside of the Coso Junction Planning Area, is currently designated as attainment for PM_{10}, as well as attainment or unclassified for all other criteria pollutants.

NAWSCL is located within areas designated as California attainment areas according to CAAQS for all criteria pollutants; however, some portions of NAWSCL are located in California nonattainment areas for ozone, PM_{10}, and hydrogen sulfide. All of Kern, Inyo, and San Bernardino counties, including NAWSCL, are designated as nonattainment for ozone and PM_{10} for CAAQS. The Trona Planning Area in San Bernardino County, which includes portions of the North and South Ranges, is designated nonattainment for H_2S CAAQS.

Table 3.3-1
National and California Ambient Air Quality Standards

Pollutant	Averaging Time	National[a]		California[b]
		Primary[c, d]	Secondary[c, e]	Concentration[c]
Ozone	1 hour	—	Same as primary standard	0.09 ppm (180 µg/m^3)
	8 hour	0.075 ppm (147 µg/m^3)		0.070 ppm (137 µg/m^3)
Respirable particulate matter	24 hour	150 µg/m^3	Same as primary standard	50 µg/m^3
	Annual arithmetic mean	—		20 µg/m^3
Fine particulate matter	24 hour	35 µg/m^3	Same as primary standard	No separate state standard
	Annual arithmetic mean	15 µg/m^3		12 µg/m^3
Carbon monoxide	8 hour	9 ppm (10 mg/m^3)	None	9.0 ppm (10 mg/m^3)
	1 hour	35 ppm (40 mg/m^3)		20 ppm (23 mg/m^3)
	8 hour (Lake Tahoe)	—	—	6 ppm (7 mg/m^3)
Nitrogen dioxide	Annual arithmetic mean	0.053 ppm (100 µg/m^3)	Same as primary standard	0.030 ppm (57 µg/m^3)
	1 hour	0.100 ppm	None	0.18 ppm (339 µg/m^3)
Sulfur dioxide	Annual arithmetic mean	0.030 ppm (80 µg/m^3)	—	—
	24 hour	0.14 ppm (365 µg/m^3)	—	0.04 ppm (105 µg/m^3)
	3 hour	—	0.5 ppm (1,300 µg/m^3)	—
	1 hour	0.075 ppm	—	0.25 ppm (655 µg/m^3)
Lead[f]	30-day average	—	—	1.5 µg/m^3
	Calendar quarter	1.5 µg/m^3	Same as primary standard	—
	Rolling 3-month average[g]	0.15 µg/m^3		—
Visibility-reducing particles	8 hour	No national standards		Extinction coefficient of 0.23 per kilometer—visibility of 10 miles or more (0.07 to 30 miles for Lake Tahoe) because of particles when the relative humidity is less than 70%. Method: Beta attenuation and transmittance through filter tape
Sulfates	24 hour			25 µg/m^3
Hydrogen sulfide	1 hour			0.03 ppm (42 µg/m^3)
Vinyl chloride[f]	24 hour			0.01 ppm (26 µg/m^3)

Notes: mg/m^3 = milligrams per cubic meter, $PM_{2.5}$ = fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less, PM_{10} = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less, ppm = parts per million, µg/m^3 = micrograms per cubic meter.

[a] National standards (other than those for ozone and particulate matter and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in 1 year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact U.S. Environmental Protection Agency for further clarification and current federal policies.

[b] California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM_{10}, $PM_{2.5}$, and visibility-reducing particles—are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[c] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr, ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

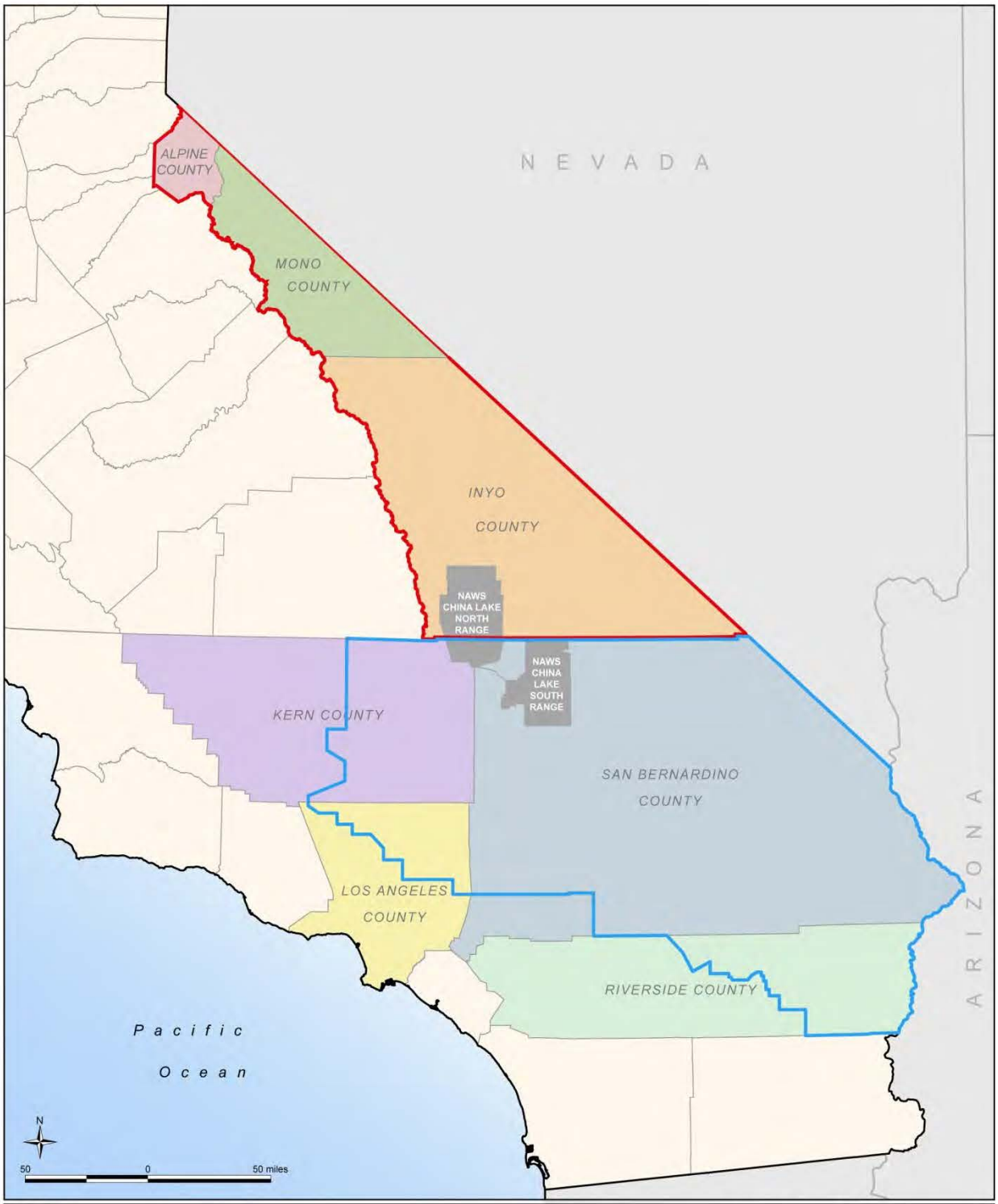
[d] National primary standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

[e] National secondary standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[f] The California Air Resources Board has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[g] National lead standard, rolling 3-month average: final rule signed 1October 15, 2008.

Source: CARB 2010.



Great Basin Valleys and Mojave Desert Air Basins

Figure 3.3-1

Table 3.3-2
NAWSCL Federal Nonattainment and Attainment/Maintenance Areas

Pollutant	Planning Area	Attainment Status	NAWSCL Coverage
PM_{10}	Indian Wells	Attainment/Maintenance	Portion of the North Range
PM_{10}	Coso Junction	Attainment/Maintenance	Most of North Range
PM_{10}	Trona	Nonattainment (Moderate)	Portion of North Range, and portion of South Range
PM_{10}	San Bernardino County (outside of Trona Planning Area)	Nonattainment (Moderate)	Portion of South Range
PM_{10}	Owens Valley (portion of Inyo County)	Nonattainment (Serious)	Northwestern corner of the North Range

Source: USEPA 2011.

Within portions of each air basin, the respective air quality management district (AQMD) or air pollution control district (APCD) is the agency responsible for protecting public health and welfare through the administration of federal and state air quality laws and policies. These air districts monitor air pollution, prepare and implement their portion of the state implementation plan (SIP), and promulgate rules. The SIP for each air district includes strategies and tactics to be used to attain and maintain acceptable air quality in each jurisdiction, including establishing annual air emission budgets for the area. The rules for each district include procedures and requirements to control the emissions of pollutants and prevent significant adverse impacts. The air districts within the NAWSCL area are the Eastern Kern Air Pollution Control District (EKAPCD) in the Kern County portion of the MDAB, the Mojave Desert AQMD (MDAQMD) in the San Bernardino County portion of the MDAB, and the Great Basin Unified APCD (GBUAPCD) in the Inyo County portion of the GBVAB.

There are several air quality monitoring stations located in proximity to and at NAWSCL. The Ridgecrest monitoring station is in Kern County, south of the North Range. There is one monitoring station at Coso Junction located along U.S. Highway 395 in Inyo County, west of the North Range. In addition there are a number of PM_{10} monitors located around Owens Lake northwest of the North Range. There is one monitoring station located inside of the NAWSCL perimeter fence. In San Bernardino County, the nearest monitoring site is in Trona, approximately 19 miles (30 kilometers) northeast of the Main Gate. Table 3.3-3 summarizes the available data for the maximum concentrations and standards exceedances of CO, NO_2, O_3, PM_{10}, and $PM_{2.5}$ recorded at the Ridgecrest (PM_{10} and $PM_{2.5}$), Trona (NO_2 and O_3), and Barstow (CO) monitoring stations from the most recent available data (2007 through 2010).

As shown in Table 3.3-3, no exceedances of the federal 24-hour PM_{10} standard were recorded in this timeframe at the Ridgecrest or Trona stations. The more stringent state 24-hour PM_{10} standard has been exceeded at the Ridgecrest and Trona stations. Some exceedances of the federal 8-hour O_3 standard were recorded within this timeframe at the Trona station; however, there were no exceedances in 2010. The state 1-hour O_3 standard was exceeded 3 times in 2008 at the Trona station.

3.3.3.3 Federal Requirements

State Implementation Plan
Section 110 of the CAA requires each state to develop, adopt, and implement a SIP to achieve, maintain, and enforce federal air quality standards throughout the state. The SIP must be approved by USEPA. Deadlines for achieving these standards vary according to air pollutant and the severity of existing air

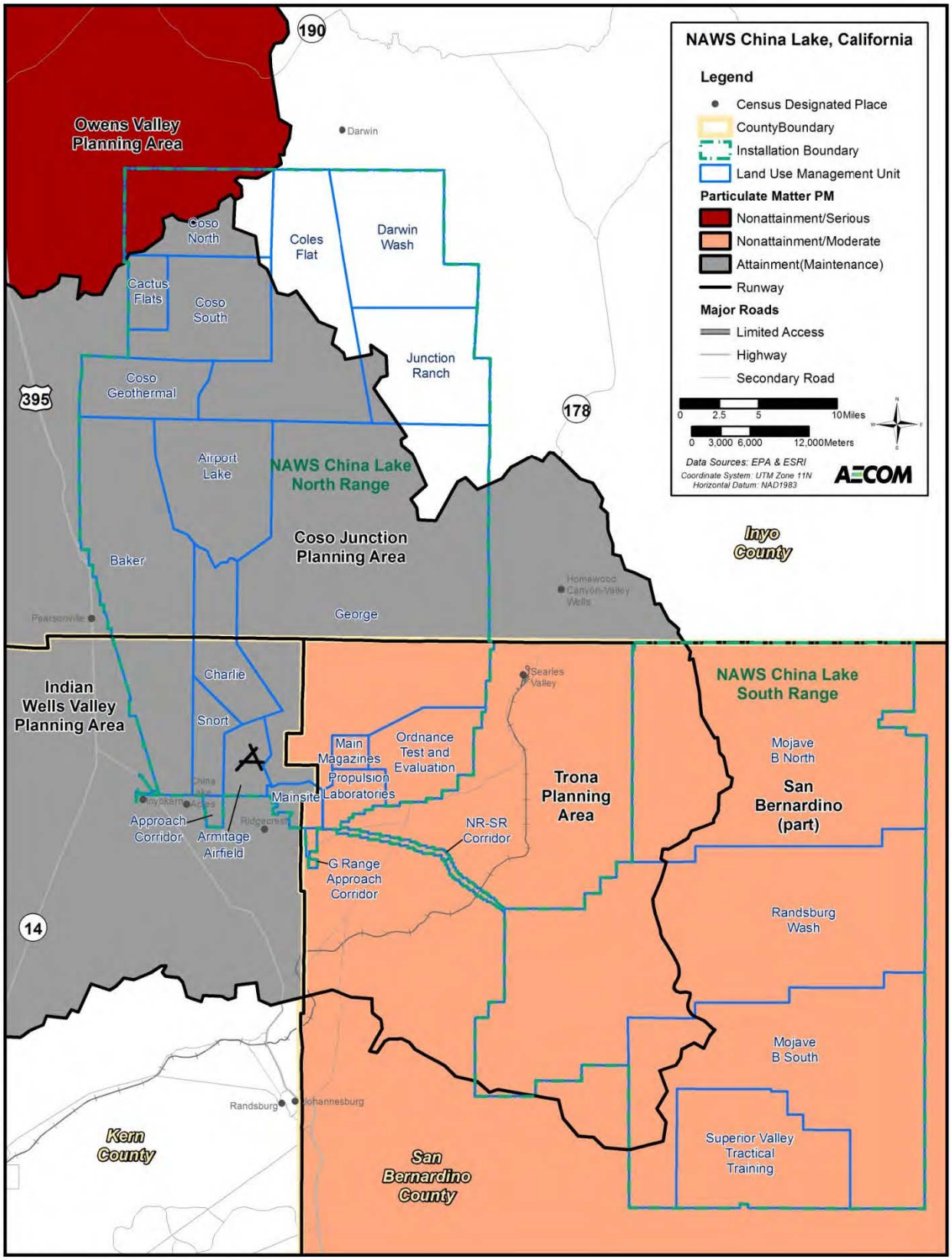


Figure 3.3-2 PM_{10} Nonattainment and Maintenance Areas for the NAWSCL Vicinity

Table 3.3-3
Ambient Air Quality Monitoring Stations Summary

Pollutant Standards	2007	2008	2009	2010
Carbon Monoxide (CO)				
National maximum 8-hour concentration (ppm)	0.89	1.23	0.89	0.89
State maximum 8-hour concentration (ppm)	0.89	1.27	0.89	0.89
Number of Days Standard Exceeded				
NAAQS 8-hour (>9.0 ppm)	0	0	0	0
CAAQS 8-hour (>9.0 ppm)	0	0	0	0
Nitrogen Dioxide (NO_2)				
State maximum 1-hour concentration (ppm)	0.049	0.062	0.049	0.052
Annual Average (ppm)	0.004	0.004	0.004	0.005
Number of Days Standard Exceeded				
CAAQS 1-hour	0	0	0	0
Ozone (O_3)				
State maximum 1-hour concentration (ppm)	0.082	0.100	0.082	0.085
National maximum 8-hour concentration (ppm)	0.077	0.094	0.077	0.072
Number of Days Standard Exceeded				
CAAQS 1-hour (>0.09 ppm)	0	3	0	0
NAAQS 8-hour (>0.075 ppm)	7	7	2	0
Particulate Matter (PM_{10}) [a]				
National maximum 24-hour concentration ($\mu g/m^3$)	46.3	57.0	46.3	52.6
State maximum 24-hour concentration ($\mu g/m^3$)	44.0	53.5	44.0	48.0
State annual average concentration ($\mu g/m^3$)	21.9	22.0	21.9	*
Estimated Number of Days Standard Exceeded				
NAAQS 24-hour (>150 $\mu g/m^3$)	0	0	0	0
CAAQS 24-hour (>50 $\mu g/m^3$)	0	6.1	0	*
Particulate Matter ($PM_{2.5}$) [a]				
National maximum 24-hour concentration ($\mu g/m^3$)	14.2	26.8	14.2	19.5
State maximum 24-hour concentration ($\mu g/m^3$)	14.2	26.8	14.2	19.5
National annual average concentration ($\mu g/m^3$)	5.7	7.0	12.6	12.0
State annual average concentration ($\mu g/m^3$)	5.7	*	5.7	*
Estimated Number of Days Standard Exceeded				
NAAQS 24-hour (>65 $\mu g/m^3$)	0	0	0	0

Notes: ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter

* Data Unavailable

[a] State and national statistics may differ for the following reasons: State statistics are based on California-approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may, therefore, be based on different samplers. State statistics are based on *local* conditions; national statistics are based on *standard* conditions. State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

Source: CARB 2011.

quality problems. In California, the SIP consists of separate elements for different regions of the state. SIP elements are developed on a pollutant-by-pollutant basis whenever one or more air quality standards are being violated. Local AQMDs/APCDs have the primary responsibility for developing and adopting the regional elements of the California SIP.

The applicable SIPs for NAWSCL are as follows:

- 2010 Coso Junction Maintenance Plan;
- 2002 PM_{10} Maintenance Plan for the Indian Wells Valley;
- PM_{10} SIP for the Trona Nonattainment Area;
- PM_{10} SIP for the San Bernardino County (part) Nonattainment Area; and
- 2008 PM_{10} SIP for the Owens Valley Planning Area.

These SIPs contain strategies to control and reduce locally generated PM_{10} emissions in each county. These strategies include control measures for industrial process fugitives, unpaved industrial roads, paved industrial roads, and construction and demolition activities. Other emissions-source activity categories associated with NAWSCL are not identified separately in the emissions forecasts for the Planning Areas.

Although part of NAWSCL is within the Mojave Desert PM_{10} nonattainment area designated by USEPA, the Mojave Desert AQMD considers all of NAWSCL to be outside of the "planning area," which is limited to the Barstow/Victor Valley region. Therefore, the Mojave Desert PM_{10} SIP does not include any NAWSCL PM_{10} emissions in its baseline inventory or its emissions forecast.

The Owens Valley PM_{10} SIP focuses on wind erosion from the Owens Lake playa as the dominant cause of PM_{10} problems. Other identified emissions source categories (entrained dust from paved and unpaved roads, residential wood combustion, prescribed burning, industrial facilities, and agricultural operations) are considered to be only insignificant contributors.

Clean Air Act Conformity Process

Section 176(c) of the CAA requires federal agencies to ensure that actions undertaken in nonattainment or maintenance areas are consistent with the CAA and with federally enforceable air quality management plans. The CAA General Conformity requirements apply to actions involving ongoing federal agency responsibility and control over direct or indirect sources of air pollutant emissions. The General Conformity Rule establishes a process that is intended to demonstrate that the proposed federal action would not do any of the following:

- Cause or contribute to new violations of federal air quality standards;
- Increase the frequency or severity of existing violations of federal air quality standards; or
- Delay the timely attainment of federal air quality standards.

Compliance with the General 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 (i.e., an established emissions threshold). If net emissions increases exceed the relevant *de minimis* level, a formal conformity determination process must be followed. A formal conformity determination includes a demonstration that a proposed action conforms to the SIP through any one of the following five ways:

- Showing that direct and indirect emissions from the activity are specifically identified and accounted for in the SIP;
- Showing that direct and indirect emissions associated with the federal agency action are accommodated within emissions allowances contained in an approved SIP;
- Showing that emissions associated with future conditions would not exceed emissions that would occur from a continuation of historical activity levels;
- Arranging emissions offsets to fully compensate for the net emissions increase associated with the action; or
- Obtaining a commitment from the relevant air quality management agency to amend the SIP to account for direct and indirect emissions from the federal agency action.

Application of the General Conformity Rule

The General Conformity Rule applies to federal actions occurring in federal nonattainment or maintenance areas when the total direct and indirect emissions increases of nonattainment pollutants (or their precursors) exceed specified thresholds. As noted above, the emissions thresholds that trigger requirements of the General Conformity Rule are known as *de minimis* levels, which are outlined in Table 3.3-4. The General Conformity Rule does not apply in attainment/unclassified areas.

Table 3.3-4
Applicable *de minimis* Levels for NAWSCL Federal Nonattainment and Attainment/Maintenance Areas

Pollutant	Planning Area	Attainment Status	Applicable *de minimis* Level
PM_{10}	Indian Wells Coso Junction	Attainment/ Maintenance	100 tons per year (tpy)
PM_{10}	Trona San Bernardino County	Nonattainment (Moderate)	100 tpy
PM_{10}	Owens Valley	Nonattainment (Serious)	70 tpy

Stationary Sources

Stationary sources of air emissions at the various sites that could be affected by the Proposed Action include boilers, generators, munitions, on-site fugitive dust, fuel tanks, etc. The Clean Air Act Amendments (CAAA) set permit rules and emission standards for pollution sources of certain sizes. An air permit application is submitted by the prospective owner or operator of an emitting source in order to obtain approval of the source construction permit. A construction permit generally specifies a time period within which the source must be constructed. Permits should be reviewed for any modifications to the site or the air emissions sources to determine permit applicability. The USEPA oversees the programs that grant stationary source operating permits (Title V) and new or modified major stationary source construction and operation permits (New Source Review). The New Source Performance Standards (NSPS) apply to sources emitting criteria pollutants, while the National Emission Standards for Hazardous Air Pollutants (NESHAPs) apply to sources emitting hazardous air pollutants (HAP). HAPs, also known as toxic air pollutants, are chemicals that can cause adverse effects to human health or the environment. The 1990 CAAA directed USEPA to set standards for all major sources of air toxics. USEPA established a list of 188 HAPs, which includes substances that cause cancer, neurological, respiratory, and reproductive effects. The Title V major source thresholds for pollutant emissions that are applicable to NAWSCL are:

- 100 tons per year (tpy) for any criteria pollutant
- 25 tpy total HAPs
- 10 tpy for any one HAP.

The USEPA also established Prevention of Significant Deterioration regulations to ensure that air quality in attainment areas does not significantly deteriorate as a result of construction and operation of major stationary sources, and to allow future industrial growth to occur. A typical major Prevention of Significant Deterioration source is classified as anything with the potential to emit 250 tpy of any regulated pollutant in an attainment area. However, for several types of major source operations, including fossil fuel–fired steam electric plants of more than 250 million British Thermal Units per hour heat input, 100 tpy is the major PSD source threshold.

Since NAWSCL is located within a variety of nonattainment, maintenance, and attainment/unclassified areas for the PM_{10} NAAQS, the nonattainment area New Source Review (NSR) thresholds will be used to determine whether the Proposed Action is subject to nonattainment NSR requirements.

Mobile Sources
Typical mobile sources include aircraft, aircraft ground support equipment (GSE), and on-road vehicles. The aircraft, aircraft GSE and on-road vehicle emissions are regulated under the CAA Title II, which establishes emission standards that manufacturers must achieve. The emissions from non-road vehicles and construction equipment are regulated by CARB's off-road diesel rule. Therefore, unlike stationary sources, no permitting requirements exist for operating mobile sources.

3.3.3.4 State and Local Requirements

The California CAA of 1988 (26 California Health and Safety Code [CH&SC] § 10,000 et seq.) requires APCDs and AQMDs to attain and maintain both national and state ambient air quality standards at the "earliest practicable date." Local APCDs and AQMDs must prepare air quality plans demonstrating the means by which the ambient air quality standards will be attained and maintained.

Local APCDs and AQMDs have also been delegated authority by the USEPA to implement and enforce most federal requirements. Compliance with the APCDs and AQMDs regulations assures compliance and consistency with the corresponding federal requirements as well.

3.3.4 Climate and Meteorology

NAWSCL's climate is typical of the Southern California high desert: hot summers, cold winters, large daily temperature fluctuations, and low rainfall and humidity. Summer daytime temperatures often exceed 100°F (37.8°C), while summer nighttime temperatures drop into the 60s. Winter daytime temperatures average in the 50s, with winter nighttime temperatures in the 30s. Precipitation averages approximately 4 to 5 inches (approximately 10 to 13 centimeters) per year over approximately 20 days per year, including snow approximately 2 days per year. In areas of higher elevation (e.g., Coso Range), the amount of rain or snowfall may be much higher. Maximum precipitation tends to occur from November through March. Winds flow through low mountain passes and gaps in the mountain ranges that surround NAWSCL, with the strongest winds occurring in late winter and early spring.

3.3.5 Existing Air Emissions at NAWSCL

3.3.5.1 Air Emissions Sources

The dominant air emissions sources at NAWSCL are related to range flight events, airfield flight events, and range ground activities. These emissions sources are discussed below. There are also a number of activities at NAWSCL that emit minor amounts of air pollutants. These activities include gasoline station use, welding, painting, vehicle and aircraft maintenance, propellant mixing and curing, research laboratory operations, and facilities maintenance. These activities are in full compliance with air quality regulations and are permitted in accordance with the respective APCDs in Kern, Inyo, and San Bernardino counties. Other emission sources (e.g., landscape maintenance activities) are not included in the baseline emissions estimate because these sources are considered to emit negligible amounts of air pollutants.

Range Flight Events
Air emissions sources associated with range flight activity include activities conducted for weapons test and aircrew training activities throughout NAWSCL ranges. Flight events are conducted for a wide range of activities. Range flights can involve aircraft based at NAWSCL or other airfields. Flight events vary according to customer requirements and can include a single aircraft delivering a test weapon to a target site, or several aircraft in a mock air-combat duel. Typical flight events include air-to-air or air-to-surface test or training scenarios. Air-to-air events generally employ aircraft, a weapon system, a target or targets, countermeasure devices (flares or chaff), and range support facilities. An air-to-surface scenario generally employs aircraft, weapons systems, targets, and range support facilities.

Airfield Flight Events
Aircraft flight activity is the dominant emission source at Armitage Airfield. Aircraft flight events occur primarily over Kern County. However, portions of the primary airfield approach patterns are located over San Bernardino County. In addition to direct aircraft flight activity, airfield events include various ground-based emissions sources. The most significant sources are in-frame engine run-ups after routine maintenance, use of ground-support equipment, and fuel-handling activities (mostly for aircraft refueling and defueling). In-frame engine run-ups are performed after engine maintenance activities. NAWSCL maintenance activities are primarily routine servicing and inspection activities. More extensive maintenance activities are typically performed at other military installations. Ground-support equipment at Armitage Airfield includes tow tractors, weapons loaders, air-start units, portable generators, portable air conditioning units, and other minor equipment. Fuel-transfer activities include fuel deliveries to the on-installation storage tanks, loading of fuel tankers, aircraft refueling, aircraft defueling, and fuel transfers for ground-support equipment. In-frame engine run-ups, ground-support equipment use, and fuel-transfer activities occur in the Kern County portion of NAWSCL.

Range Ground Events
Air emissions sources associated with ground events include the use of live and inert munitions at designated test and target sites, GTT activities within previously disturbed locations (e.g., target areas, test sites, and instrumentation sites) and on the NAWSCL road network (i.e., roads, turnouts, or parking lots), and the use of support equipment such as portable generators.

Munitions Use at Target and Test Sites. Many of the test and training activities at NAWSCL involve the use of live or inert munitions. Inert munitions does not explode on impact but typically has a small pyrotechnic device used as a spotting charge. Live munitions generally contains an HE warhead that explodes upon impact or upon intentional initiation at static ground test areas. Inert munitions produces small volumes of air emissions associated with the discharge of the pyrotechnic device. The use of live

munitions generally produces air emissions associated with the combustion of the HE charge or warhead, and the lofting of soil and debris from the impact area.

Ground Troop Training. Air emissions sources associated with GTT activities include vehicular travel over paved and unpaved roads, munitions use at designated impact areas, and the use of portable generators. GTT are typically hosted at NAWSCL and involve using wheeled and/or small-tracked vehicles. Portable generators are generally deployed at prepared sites, and may be towed to a use location or mounted on a vehicle. GTT can involve aircraft insertion of troops (addressed under range flight events), and small- and large-caliber weapons firing.

Other Stationary Sources
NAWSCL operates various stationary sources that generate emissions. These sources include the above three highlighted range ground source categories (open explosives detonations, range support equipment, and fugitive dust generated from moving vehicles driving on unpaved roads) along with various on-installation space heating boilers, power generators, fuel tanks, paint booths, etc.

3.3.5.2 Baseline Air Emissions Inventory

NAWSCL baseline emissions were modeled for year 2010 activities based on the most recently available data and some historical inputs published in various documentations, and the air emission inventory methodology described below. Detailed emission estimates were developed for range flight events, airfield flight events, range ground activities including munitions use at target and test sites, GTT and unpaved road dust, mobile generator use), and other stationary sources. The detailed emissions analysis is provided in Appendix G.

Aircraft Operation Emissions
Aircraft engines emit criteria pollutants during all phases of aircraft operation. The methodology for estimating aircraft emissions involves evaluating the type of operations for each type of aircraft, the number of hours of operation for each aircraft type, the type of engine in each aircraft, and the mode of operation for each type of aircraft engine. Emissions occurring or that would occur higher than 3,000 feet (915 meters) were considered to be above the atmospheric inversion layer and, therefore, without impact on local air quality. Aircraft flights, for the most part, originate from Armitage Airfield, but some flights originate off the Installation.

Annual aircraft emissions from range and airfield events at NAWSCL were estimated based on the estimated annual number of sorties, range flight hours, on-installation maintenance records for stationed aircraft at NAWSCL, and the following:

- USEPA mobile sources methodology identified in Procedures of Emission Inventory Preparation, Volume IV: Mobile Sources (USEPA 1992);
- FAA-developed Emissions and Dispersion Modeling System (EDMS) for certain aircraft modes and types, which also includes EDMS default emission factors for the typical aircraft ground support equipment associated with each aircraft;
- The anticipated number of aircraft sorties presented in the Aircraft Noise Study for Naval Air Weapons Station China Lake (Wyle 2010) and Air Installations Compatible Use Zones Study Naval Air Weapons Station China Lake (U.S. Navy 2011f);
- Range Complex Management Plan Land Ranges Operations Data Book (NAVAIR Ranges Sustainability Office, March 2011);

- Naval Air Warfare Center Weapons Division Operational Requirements Document (NAWCWD 2011);
- 2004 EIS-provided range-specific flight hours and altitude profiles; and
- U.S. Navy Aircraft Environmental Support Office (AESO) provided DoN aircraft emission factors.

Armitage Airfield Aircraft Landing and Takeoff and Pattern Flight Emissions

Airfield aircraft events include aircraft landing and takeoff, touch and go, and pattern flight activity, use of ground support equipment, and aircraft refueling/defueling activities. Based on the estimated number of additional sorties on an annual basis (Wyle 2010) for on-airfield flight events and the number of NAWSCL-based aircraft, the annual aircraft operational emissions at Armitage Airfield aircraft landing and takeoff and pattern flight events were estimated for each aircraft type with various approach and departure patterns identified in the 2011 AICUZ Update. The emissions are summarized in Table 3.3-5.

Table 3.3-5
Baseline Emissions at NAWSCL

Emission Source Category	Annual Emissions (Tons per Year)						
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	CO_2[e]
Range Flight Events							
Armitage Airfield Flight Events and Aircraft Maintenance[a]	320.6	124.7	1,028.1	4.8	82.6	82.6[d]	31,763.4
Range Test and Evaluation Flights Events	0.9	8.8	5.9	0.6	6.8	6.8[d]	3,163.2
Range Ground Activities							
Munitions and Energetics Use at Target and Test Sites	--	0.3	2.7	0.0	4.8	0.1	286.7
Ground Vehicle Activities[b]	0.0	0.1	0.6	0.0	64.9	6.5	93.4
Other Stationary Sources							
Boilers, generators, tanks, paint booths, etc.	16.1	44.4	31.7	0.7	10.3	10.3[e]	1,997.4
Totals[c]	337.6	178.2	1,069.0	6.0	169.4	106.3	37,304.1

Notes:
[a] Includes airfield-related flight activity and aircraft maintenance activities and addition unmanned aerial vehicle flight activity on airfield and ranges.
[b] Includes vehicle exhaust emissions and fugitive dust from vehicles.
[c] Due to rounding, totals may differ slightly.
[d] Conservatively assume to be the same as PM_{10}.
[e] Metric tons.

Range Aircraft Flight Emissions

Range flight events include a variety of aircraft test and training activities occurring throughout the NAWSCL ranges. The majority of these events occur at altitudes greater than 3,000 feet (914 meters) above ground level. Range flight hours below 3,000 feet (914 meters) altitude were predicted using the sorties for North, Echo, and Superior Valley ranges provided in *Naval Air Warfare Center Weapons Division Operational Requirements Document* (October 2011) and distributing them using the same aircraft type profile and the same average flight time percentage that is below 3,000 feet (914 meters) altitude for each aircraft within each applicable range estimated in the 2004 EIS. The AESO-provided cruise emission factors were then multiplied to the estimated flight hours for each aircraft to predict range flight emissions summarized in Table 3.3-5.

Range Ground Emissions

Emissions resulting from range ground activities consist of operating mobile equipment such as generators, pickup trucks and ground training vehicles, and munitions explosive detonations. Table 3.3-5 shows the existing condition for range ground activities emissions forecasts.

Supporting Mobile Equipment Emissions

Ground range support equipment emissions are emitted from portable generators used in support of weapon testing and evaluation. These emissions have been estimated separately in (1) the current 2010 NAWSCL stationary source Title V emissions fee inventory for those within Inyo County and (2) the California Hotspots Analysis Reporting Program (HARP) database for those in Kern and San Bernardino counties. These sources are considered as part of the overall stationary sources regulated under CAA Title V.

Testing and Training Vehicular Emissions

Operation of ground training vehicles as well as vehicle used for the range weapon testing and evaluation program generate exhaust and fugitive dust emissions in the range areas mostly comprised of unpaved roads. The annual vehicular emissions occurring from these activities are predicted based on the unpaved road miles estimated using the geographic information system (GIS) database and the assumptions of the average vehicle usage and type established in the 2010 NAWSCL Title V emissions fee inventory for the sources within the Inyo County.

In California, the current model for estimating vehicle exhaust emissions is EMFAC2011; however, at the time this EIS was initiated, vehicle exhaust emissions were estimated using the EMFAC2007 model. Emission factors for motor vehicles were determined by modeling tactical-wheeled vehicles and other pickup trucks in the place of light-duty diesel trucks and light-duty gasoline trucks.

Fugitive dust emissions resulting from operating range ground vehicles on unpaved roadways were estimated using the USEPA AP-42 (USEPA 2006) unpaved roads emission factor formula.

Munitions Emissions

USEPA AP-42 handbook-provided emission factors for both weapons firing and explosive detonation were used to develop the list of annual munitions-emitting criteria pollutants emissions and GHGs in terms of CO_2 emissions.

Other Stationary Source Emissions

NAWSCL is considered a major stationary source, which requires a Title V operating permit. Typical ground stationary sources include range testing mobile units, space heating boilers, paint booths, laboratories, developed test sites, and on-installation fugitive dust. Because the Installation extends into three different air quality control districts, NAWSCL is currently operating under three separate Title V permits covering stationary sources within:

- San Bernardino County – Mojave Desert Air Quality Management District;
- Kern County – Kern County Air Pollution Control District; and
- Inyo County – Great Basin Unified Air Pollution Control District.

The most recent actual stationary source emissions inventories were used as reference for the baseline condition. These inventories include the levels reported as part of 2010 Title V fee inventory for the sources in the Inyo County and the levels obtained from the California HARP database for the sources in the Kern and San Bernardino counties.

Table 3.3-5 summarizes baseline actual emissions estimates for the primary NAWSCL range and airfield events. In addition to the criteria pollutants, greenhouse gas emissions in terms of CO_2 were also estimated based on emissions factors available for respective source types. Since $PM_{2.5}$ emission factors are not available for each source category, it was conservatively assumed that PM_{10} emissions would be also considered entirely as $PM_{2.5}$ for some source categories.

3.4 BIOLOGICAL RESOURCES

Biological resources include plant and wildlife species, plant communities, and wildlife habitats. Plant communities are assemblages of plant species typically defined by the dominant plant species within the assemblage. Wildlife habitats are the natural environments of animals, consisting of biotic features (plant and animal assemblages) and abiotic features (air, water, temperature regime, substrate, slope, aspect, elevation, wind, soil pH, alkalinity, soil texture, and many other factors). Wildlife at NAWSCL includes numerous species of invertebrates, fish, amphibians, reptiles, birds, and mammals.

This section focuses on plant and wildlife species and their habitats, and the current approach applied for the management of these resources. NAWSCL biological resources management programs focus on federally listed threatened and endangered species, and other federally protected species, and also provide for the conservation of NAWSCL special status species, as well as wetlands and riparian habitats on the NAWSCL ranges. Federally listed threatened and endangered plant or wildlife species are those listed as threatened or endangered by USFWS. Other federally protected species include birds covered by the Migratory Bird Treaty Act (MBTA) and bald eagles (*Haliaeetus leucocephalus)* and golden eagles (*Aquila chrysaetos*) protected under the Bald and Golden Eagle Protection Act. NAWSCL special status species are an additional group of species managed at NAWSCL, which include plants and animals not federally protected but considered important components of the Installation's biological resources. Riparian areas are permanent or ephemeral surface water features occurring on the NAWSCL ranges. No wetlands have been identified on NAWSCL. This section also provides a discussion of existing land disturbances (e.g., effects of wild horses, burros, and fires) and the related effects on biological resources.

3.4.1 Region of Influence

The ROI for biological resources includes all areas within NAWSCL boundaries. However, some resources (e.g., horses, Inyo California towhee, etc.) extend beyond NAWSCL boundaries and are managed in coordination with other agencies.

3.4.2 Special Status Species Categories

There are two primary types of special status species categories that are managed on NAWSCL. Each category is associated with different management drivers. The two special status species categories are defined, as follows.

3.4.2.1 Federally Protected Species

Federal law directs that federal agencies and departments use their authority to conserve endangered and threatened species through compliance with the Endangered Species Act (ESA) (16 U.S.C. 1531 et seq.). NAWSCL management of federally listed or otherwise protected species and their habitats involves coordination with USFWS, which may include informal or formal consultation under Section 7 of the ESA or under the provisions of either the Bald and Golden Eagle Protection Act or the MBTA, and the development of conservation measures to minimize potential impacts to these species. The species in this category have the highest management priority, relative to biotic resources.

The USFWS published the military readiness final rule on "Migratory Bird Permits; Take of Migratory Birds by the Armed Forces" in the Federal Register on February 28, 2007 (72 FR 8931). This authorizes the Armed Forces to incidentally take migratory birds during those military readiness activities authorized by the Secretary of Defense or the Secretary of the military department concerned. 50 CFR 21.15 (Authorization of Take Incidental to Military Readiness Activities) specifically states: "The Armed Forces

may take migratory birds incidental to military readiness activities provided that, for those ongoing or proposed activities that the Armed Forces determine may result in a significant adverse effect on a population of a migratory bird species, the Armed Forces must confer and cooperate with [USFWS] to develop and implement appropriate conservation measures to minimize or mitigate such significant adverse effects." If monitoring is determined to be necessary, the military would be responsible for maintaining all monitoring records for 5 years.

3.4.2.2 NAWSCL Special Status Species

NAWSCL special status species are defined as those species that are not protected under federal law, but are considered important components of the Installation's biotic system and are categorized as special status species by various federal, state, and local resource agencies and organizations. A species may be considered NAWSCL special status if it has a limited range, is endemic to a particular area, is of questionable or unclear taxonomic status, or is of scientific interest. NAWSCL also considers those species exhibiting unique or rare features (such as creosote clones or Joshua tree spikes), and those occurring in a known valuable habitat or in a protected habitat as warranting stewardship. However, per the Sikes Act, stewardship and conservation of natural resources are to be conducted without compromising the military mission. NAWSCL special status plant and wildlife species are discussed in Appendix D. Additionally, NAWSCL special status species are defined in the INRMP, and include both plants and animals that are not federally protected now but are either state listed or on watch lists as a result of a species-limited distribution or other risk factors. These watch lists and other factors are described for NAWSCL special status plant and wildlife species, as follows.

The INRMP indicates that NAWSCL special status species have been determined based on one or more of the following criteria:

- Listed as threatened or endangered by the state;
- Proposed for federal listing or a former USFWS Category 2 or 3 species;
- State, BLM, or other agencies/organizations have identified them as warranting special management consideration (based on other resource agencies or professionally recognized organizations or specialists);
- Listed in the California Natural Diversity Data Base (CNDDB);
- Of scientific interest;
- Rare or endemic;
- Range extension;
- Unknown taxonomy (i.e., specimens not confirmed as definitely matching a known rare species but similar enough to warrant tracking for further study); or
- Recognized by NAWSCL technical staff as unique or of scientific interest.

The conservation of these species is a management goal of the INRMP, and they are provided management consideration during the land use planning process defined in the CLUMP. The Sikes Act requires that an INRMP provide for "no net loss in the capability of the military Installation lands to support the military mission of the installation." The purpose of the INRMP is to accommodate mission requirements while meeting natural resource compliance responsibilities.

Should a NAWSCL special status species be identified in an area that may be affected by a proposed project, efforts are made to avoid or minimize impacts to these resources whenever practicable in light of military mission requirements. However, they are not afforded the level of protection required for species listed under the federal ESA or other federal law.

3.4.3 Regulatory Framework

Guidance and direction for the management of biological resources at NAWSCL is primarily provided through the federal laws, associated regulations, and management plans and initiatives described in the following sections.

3.4.3.1 Federal Endangered Species Act

Section 7 of the ESA requires that USFWS be consulted before implementing an action that may affect federally listed endangered or threatened species or their designated critical habitats. The ESA specifically prohibits "taking" (e.g., killing, harming, or harassing) a federally listed endangered or threatened species. Informal consultation is an optional process that allows the federal agency and USFWS to evaluate the potential effects of the Proposed Action through conversations and correspondence in an attempt to determine whether a proposed federal action may affect listed species or designated critical habitat, and to suggest potential modifications to avoid adverse effects. Formal Section 7 consultation requires the federal agency to prepare a Biological Assessment (BA). After reviewing the BA, USFWS issues a BO stating whether actions of the federal agency would or would not jeopardize the continued existence of any threatened or endangered species. A non-jeopardy BO contains reasonable and prudent measures as well as protective measures that must be implemented for the action to minimize the potential for "take."

NAWSCL previously consulted with USFWS and received BOs for two of the three federally listed wildlife species occurring at the Installation: Mohave tui chub (*Siphateles* [*Gila*] *bicolor mohavensis*) and desert tortoise (*Gopherus agassizii*). The Inyo California towhee (*Pipilo crissalis eremophilus*) is managed under a Cooperative Management Agreement with the USFWS. Of these species, two have USFWS-designated critical habitat on NAWSCL. Critical habitat for the desert tortoise occurs within the Superior Valley on the South Range, and critical habitat for the Inyo California towhee occurs on the eastern edge of George Range in the southern Argus Mountains, on the North Range. These BOs and the Cooperative Management Agreement cover a range of actions, from habitat maintenance and enhancement to covering established military activities conducted in desert tortoise habitat on NAWSCL.

Mohave Tui Chub

A BO (1-8-97-F-15) for the removal of channel aquatic vegetation (cattails) (*Typha latifolia*) in Mohave tui chub habitat was originally issued by USFWS in 1982 and updated in 1990. In 1997, a BO (1-8-97-F-39R) was issued for a Mohave tui chub habitat enhancement plan, designed to eliminate the need for annual cattail removal from portions of the channel system. Also in 1997, a BO (1-8-97-F-13) was issued for the expansion of channel maintenance activities. This BO included a mark/recapture and habitat monitoring program. Monitoring of the Mohave tui chub occurs annually. This BO was subsequently amended in 2002 to address modifications to the mark-recapture program, and amended again in 2003 to lengthen the period of time when vegetation removal could occur. NAWSCL is currently in consultation with USFWS to develop a long-term habitat management strategy for the Mohave tui chub.

Desert Tortoise

In 1992, NAWSCL worked with USFWS to create a programmatic BO (1-6-92-F-60) that would allow NAWSCL limited authority to construct facilities and conduct military activities in desert tortoise habitat without project-by-project consultation with USFWS. This limited authority was granted for projects under 20 acres (50 hectares) in size within areas of low desert tortoise density, and projects under 2.5 acres (1.0 hectare) within areas of high desert tortoise density. On February 9, 2013, USFWS issued a BO (8-8-12-F-29) with an incidental take statement that allows for an average take of four desert tortoises annually by direct mortality over the 25-year life of the withdrawal, with a total of 100 desert tortoises anticipated to be killed as a result of DoN operations at NAWSCL over the 25-year life of the Proposed Action. Under the terms of the BO, once the average take limit has been reached in any given year, the Installation will reinitiate a Section 7 consultation to address the ongoing management of NAWSCL activities installation-wide. To date, very few animals are known to have been affected by NAWSCL activities, such that annual take has consistently remained below the level requiring reinitiation of ESA Section 7 consultation under the terms of the previous desert tortoise BO issued in 1995 (1-8-95-F-30R).

In addition to the aforementioned terms for take of desert tortoise, the Installation prepares and submits an annual report of projects covered by the provisions of the BO (8-8-12-F-29). Surveys must be conducted for all projects within potential desert tortoise habitat, and personnel working in or near desert tortoise habitat must be briefed regarding procedures to avoid harming desert tortoise and to minimize loss of their habitat. Project-specific measures are routinely implemented such that potential for take of desert tortoise is minimized, typically without mission conflicts. These impact minimization measures include implementing education programs, implementing existing operating procedures for activities in areas with high desert tortoise density, clearly marking project area boundaries, relocating animals at-risk found within project boundaries, and minimizing predation risks. NAWSCL is also required to conduct post-fire monitoring in order to map the extent of brush fires and to document any fire-related desert tortoise mortalities. Results of survey efforts and effectiveness of take or avoidance measures for all projects are provided to USFWS in the annual report.

Inyo California Towhee

On June 17, 2010, USFWS and NAWSCL entered into a Cooperative Management Agreement (USFWS Reference No. 81440-2010-B-0173) for the management of the Inyo California towhee (USFWS 2010). Under the Cooperative Management Agreement, NAWSCL would continue to implement conservation measures beneficial to the species, including the following: consider avoiding (to the maximum extent feasible) potential impacts during planning efforts, removing feral burros and horses from the towhee's range, fencing off towhee habitat (primarily riparian tracts and springs), removing invasive plants, and monitoring the towhee population within the boundaries of NAWSCL.

3.4.3.2 Sikes Act

The Sikes Act as amended in 1997 requires the development and implementation of an INRMP at military installations. Guidance and directives contained in this legislation are very similar to the land use management requirements of the CDPA, and the land use planning guidelines of the FLPMA. Baseline resource conditions, resource management priorities, and applicable goals and management guidelines are included in the NAWSCL INRMP and are a principal component of the CLUMP. Sikes Act guidance for the development of an INRMP is as follows:

- Address overall installation land management, not just land use;
- Develop management goals compatible with a military installation's mission;
- Support the conservation and rehabilitation of natural resources;

- Provide sustainable multipurpose uses of natural resources;
- Provide mission-compatible public access for the use of natural resources; and
- Provide an opportunity for public review and comment of the draft plan.

3.4.3.3 Other Laws and Regulations

There are several other federal laws and regulations that are relevant to biological resources management decisions. The Bald and Golden Eagle Protection Act specifically prohibits taking bald and golden eagles or any part, nest, or egg of these species. Golden eagles are residents at NAWSCL and bald eagles are extremely rare migrants. The federal MBTA specifically prohibits take of migratory birds, including nests and eggs, as well as possession of eggs, nests, or any part of a covered species. However, the DoI has authorized take of migratory birds incidental to military readiness activities under the guidelines established in 50 CFR 21.15 – Authorization of Take Incidental to Military Readiness Activities. NAWSCL also conserves and manages, to the extent practicable, plant and animal species identified as species warranting stewardship by other resource agencies and species experts (Appendix D); these are addressed in the INRMP. Responsibility for management of wild horses and burros on NAWSCL was provided in the CDPA and is addressed in the INRMP and current wild horse and burro management strategies. Please see discussion of changes with respect to management of feral horses and burros under the INRMP update's revised Wild Horse and Burro Management Program (WHBMP) in Section 1.2.2.1.

3.4.4 Current Management Practices

The following sections summarize current management practices for the conservation and protection of biological resources on NAWSCL. In addition to the long-standing biological resources conservation and compliance programs that have been implemented at NAWSCL over the past 35 years, the INRMP was developed in compliance with the Sikes Act, as amended.

3.4.4.1 Integrated Natural Resources Management Plan

The EIS/LEIS incorporates the 2014 INRMP. The INRMP describes the Installation's natural resources management programs, goals, and guidelines; prioritizes management efforts; establishes a baseline for existing resource conditions; and delineates staffing and funding requirements. The 2014 INRMP formalizes existing programs and focuses on the five principal resource management areas: threatened and endangered species, habitat conservation (including species warranting stewardship), water resources, wild horse and burro management, and resources inventory and data management. Per DoD and DoN policy, INRMPs are reviewed annually and updated as needed. Natural resources conditions and management goals and guidelines from the INRMP are incorporated into the CLUMP.

3.4.4.2 Bird/Aircraft Strike Hazard Plan

Bird/Aircraft Strike Hazard (BASH) plans are required by DoD for military installations where there is a potential for conflict between aircraft operations and wildlife. BASH plans contain installation-specific information and guidelines to minimize collisions between aircraft and birds or other animals.

In September 2002, NAWSCL developed and formally implemented a BASH plan for air events. The plan complies with DoD and DoN directives, and is implemented through NAWSCL Instruction (NAWSINST) 3750.2. The BASH plan establishes a Bird Hazard Working Group to monitor and implement the BASH plan. The BASH plan is designed to accomplish the following:

- Establish procedures for identifying and reporting local hazardous bird activity;

- Identify high hazard situations and establish Bird Hazard Conditions;
- Provide for issuance of information to all local and transient aircrews on bird hazards and procedures for bird avoidance;
- Establish aircraft and airfield operating procedures to avoid high hazard situations;
- Establish guidelines to decrease airfield attractiveness to birds (or other wildlife that can be an aviation hazard);
- Provide active and static procedures for dispersing/hazing birds when they are present on the airfield;
- Establish procedures to alter or discontinue flying events during hazardous conditions; and
- Establish procedures for collecting and reporting damaging and nondamaging bird strikes.

3.4.5 Habitat Enhancement Efforts

There are several ongoing habitat enhancement efforts at NAWSCL, including the Mohave tui chub habitat enhancement project and the rangewide spring/riparian fencing project. The Mohave tui chub habitat enhancement project has proceeded under provisions of the BO (1-6-92-F-60), discussed in Section 3.4.2.1. These activities involved widening and deepening 250 feet (76 meters) of channels in the Lark Seep system. The cattails (which degrade Mohave tui chub habitat when present in dense stands) are not expected to grow in deeper waters within and along one side of the channel. Gradual slopes have been constructed along the opposite side of the channel to allow some emergent vegetation growth (a necessary component of Mohave tui chub habitat), and areas of open, slow-flowing water (also necessary for Mohave tui chub) are being maintained. NAWSCL is currently in consultation with USFWS on proposed efforts to gather additional hydrologic information within the Lark Seep System as the first step in a process to develop a long-term habitat management solution that will maintain the viability of the chub habitat and population.

Efforts to minimize wild horse and burro effects have included fencing approximately 20 springs throughout NAWSCL ranges to protect these resources from horse and burro grazing impacts. The fencing allows continued access by Nelson's bighorn sheep (*Ovis canadensis nelsoni*), mule deer (*Odocoileus hemionus*), and other native wildlife, but precludes access by larger feral animals. However, feral burros (*Equus asinus*) and feral horses (*Equus caballus*) are typically able to access water that flows from the fenced areas, which protect habitat and water sources, to downstream areas outside those fences. Other riparian areas may be fenced during subsequent years as needs are identified and funding becomes available.

3.4.5.1 Data Collection and Management

NAWSCL continues to fund and support biological data collection efforts by supporting and encouraging outside research. These projects support collection of baseline data used to facilitate resource management and allow specific proactive management actions to be taken. These projects have included focused surveys for rare/endemic species or other NAWSCL special status species, genetic determinations of species taxonomy, and general census of habitats (particularly at springs and in riparian zones). The Installation has prioritized these data collection efforts such that federally listed species have the highest priority for support, followed by NAWSCL special status species.

Efforts to enter natural resource data collected by NAWSCL into its GIS database have been initiated. The data are used to support management decisions and are made available to planners and project

proponents. Making data available to managers enhances resource management efforts. GIS data can be used to identify areas that support high-value resources and can assist project proponents and planners in designing projects so that impacts to biological resources are avoided or minimized to the greatest extent feasible.

3.4.5.2 Environmental Awareness Training

Specific briefings are provided to range users and personnel involved with programs occurring within desert tortoise habitat. These briefings are performed in accordance with the terms and conditions of the Installation's programmatic BO for the protection and conservation of desert tortoise and its habitat installation-wide. This effort supports the INRMP's guidance for NAWSCL natural resource staff to coordinate with operators, and it supports the CLUMP's requirement to conduct briefings for personnel working in endangered species habitat.

3.4.5.3 Public Access

NAWSCL continues to closely control and monitor public access in designated areas for security and for safety reasons. Public access is also controlled to reduce impacts to biological resources. Public access is allowed into approved areas using existing roadways, and no new surface-disturbing activities are permitted.

3.4.5.4 Regional Environmental Management and Land Use and Planning Initiatives

NAWSCL continues to participate in planning initiatives, including species-specific recovery plans and regional natural resources management and land use efforts. NAWSCL has an active role in several ongoing regional land use and ecosystem management planning efforts. Partnerships with agencies have been established to prepare these plans and to allow NAWSCL to continue to take an active role in integrating land use planning efforts at the Installation with other federal, state, and local agencies (in accordance with the FLPMA and DoD and DoN directives). These efforts are summarized in the following sections.

California Desert Conservation Area Plan

The California Desert Conservation Area Plan (CDCAP) is a comprehensive, long-range plan for managing, using, developing, and protecting the public lands under the cognizance of the California Desert Conservation Area (12,000,000 acres [4,856,200 hectares]), including the area surrounding NAWSCL.

West Mojave Coordinated Management Plan

The West Mojave Coordinated Management Plan (WMCMP) reflects a multi-agency partnership formed to develop a comprehensive, interagency planning effort for the conservation of biological resources in the West Mojave region. This 9,000,000-acre (3,642,185-hectare) planning effort involves 4 counties (Kern, San Bernardino, Inyo, and Los Angeles), 11 cities, and 4 military bases. A multi-species, multi-habitat, multi-jurisdiction plan is being developed that will focus on the recovery of the desert tortoise and management of a number of other species.

Northern and Eastern Mojave Planning Effort

The objective of the Northern and Eastern Mojave Planning Effort is to provide a regional perspective for managing federal lands and to update agency-specific management plans to reflect the changes made by the CDCAP.

Mojave Desert Ecosystem Program

The objective of the regional Mojave Desert Ecosystem Program is to develop a centralized environmental database from existing databases at federal and state land management agencies in the Mojave Desert, including NAWSCL. The database would assist and facilitate the collection, storage, and analysis of land management information to facilitate interagency cooperation toward an ecosystem approach to land management in the region.

3.4.6 Overview of Biological Resources

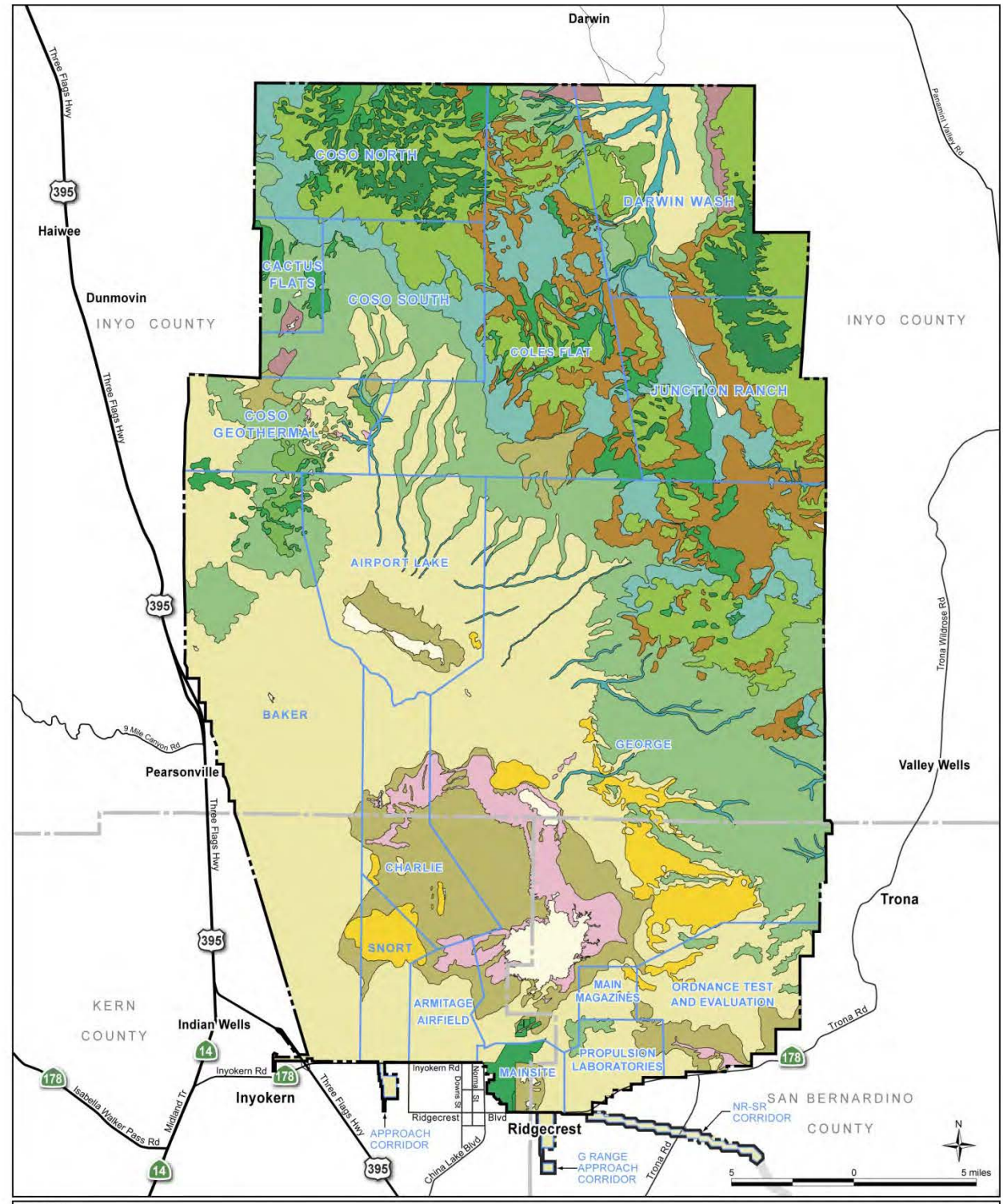
3.4.6.1 Vegetation

California is botanically divided into three floristic provinces: California, Great Basin, and Desert (Hickman 1993). All three provinces are present in the northern half of the North Range. The southern half of the North Range and all of the South Range are in the Desert floristic province. The vegetation of NAWSCL is also influenced by the presence of numerous springs and seeps, and by its diverse topography and wide range of elevation. North Range elevations range from 2,160 feet (658 meters) above mean sea level (AMSL) on the China Lake playa, to more than 8,839 feet (2,694 meters) AMSL on Maturango Peak. Minimum and maximum elevations on the South Range are 1,660 feet (506 meters) AMSL at the Movie Lake playa and 5,578 feet (1,700 meters) AMSL on Straw Peak (U.S. Navy 1989a).

Seventeen different native plant communities are on NAWSCL; all except desert holly scrub are present on the North Range and nine communities are on the South Range (Figures 3.4-1 and 3.4-2). An additional non-native vegetation type is urban exotic/disturbed. Transition zones occur between many of the plant communities, such as desert transition scrub; these are not shown in Figures 3.4-1 or 3.4-2. The plant communities vary from barren playas, alkali sink, saltbush scrub, and creosote bush scrub at lower elevations, to sagebrush scrub and pinyon woodland found in the Coso and Argus ranges. Mojave mixed woody scrub is the most common plant community type, followed by creosote bush scrub. Desert riparian areas are scattered throughout both ranges in association with springs and seeps (U.S. Navy 1989a). Riparian is also not mapped; acreages of this plant community and desert transition scrub at NAWSCL are currently not available (see footnote [a] for Table 3.4-1). Figures 3.4-1 and 3.4-2 show the major plant communities at NAWSCL, and brief descriptions are provided in Appendix D.

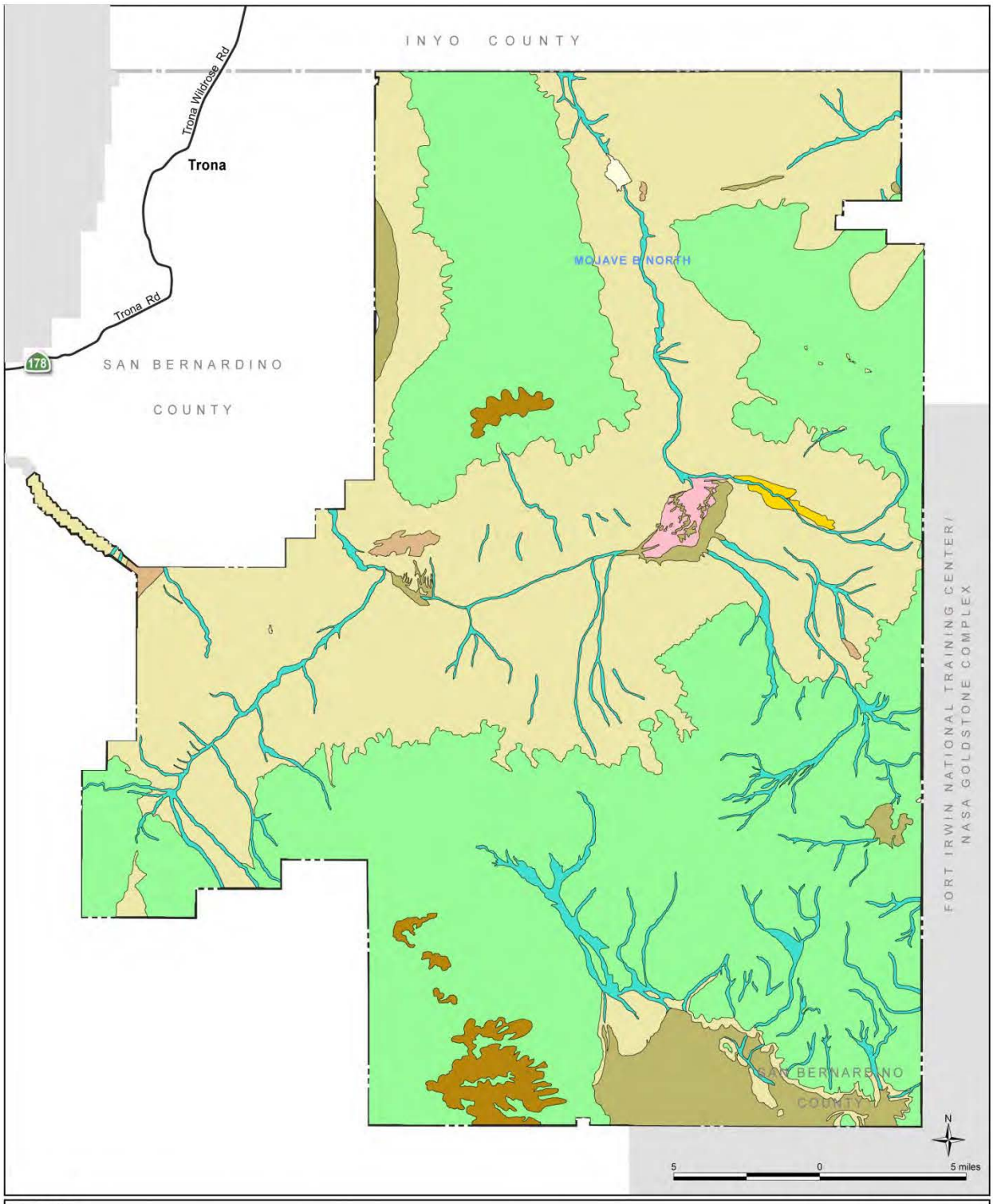
Approximately 675 vascular plant taxa (species, subspecies, and varieties) are known to occur on NAWSCL. Most of these plants are representative of the Desert and Great Basin provinces, but a small number of plants that typically occur in the Sierra Nevada are also present. An additional 20 taxa, primarily naturalized weeds, are known to occur only in the NAWSCL main complex. Appendix D lists the various plant species known to occur on NAWSCL.

The plant communities described in this section are based primarily on a classification system developed by Holland (1986), with minor modifications by NAWSCL to make it more applicable to the Installation. Table 3.4-1 summarizes these plant communities. Plant community classifications that supplement Holland 1986, or that are cross-referenced, are Beatley 1976, Brown 1982, Munz 1974, and Sawyer and Keeler-Wolf 1995.



Plant Communities on North Range

Figure 3.4-1



Plant Communities on South Range

Figure 3.4-2

Table 3.4-1
Plant Communities on NAWSCL

NAWSCL Plant Community	Range	Elevation Range (feet/meters AMSL)	Defining Species	Acres/Hectares
Mojave Sand Field	Both	2,200–3,800/670–1,158	Creosote bush (*Larrea tridentata*)	16,788/6,794
Alkaline Sink Scrub	Both	1,900–2,050/579–625	Bush seepweed (*Suaeda moquinii*)	16,042/6,492
Blackbrush Scrub	Both	3,500–6,500/1,067–1,981	Blackbrush (*Coleogyne ramosissima*)	48,914/19,795
Creosote Bush Scrub	Both	1,900–5,500/579–1,676	Creosote bush (*Larrea tridentata*)	416,342/168,488
Desert Holly Scrub	South	Below 3,000/914	Desert holly (*Atriplex hymenolytra*)	1,395/565
Desert Transition Scrub	Both	4,000–6,500/1,219–1,981	Linear-leaved goldenbush (*Ericameria linearfolia*)	Unknown [a]
Great Basin Mixed Scrub	North	5,000–8,000/1,524–2,438	Bitterbrush (*Purshia tridentata* var. *glandulosa*)	66,695/26,991
Hopsage Scrub	Both	3,000–5,000/914–1,524	Spiny hop sage (*Grayia spinosa*)	5,498/2,225
Mojave Mixed Woody Scrub	Both	2,500–5,500/762–1,676	Bladder sage (*Salazaria mexicana*)	350,398/141,801
Mojave Wash Scrub	Both	3,000–4,000/914–1,219	Cheesebush (*Ambrosia salsola*)	27,134/10,981
Sagebrush Scrub	North	4,500–6,000/1,372–1,829	Big sagebrush (*Artemisia tridentata*)	40,997/16,591
Saltbush Scrub	Both	Below 5,000/1,524	Allscale (*Atriplex polycarpa*)	67,076/27,145
Shadscale Scrub	North	3,500–5,000/1,067–1,524	Shadscale (*Atriplex confertifolia*)	3,590/1,453
Joshua Tree Woodland	North	4,000–7,000/1,219–2,134	Joshua tree (*Yucca brevifolia*)	18,430/7,458
Pinyon Woodland	North	Above 6,500/1,981	Pinyon pine (*Pinus monophylla*)	18,959/7,672
Playa	Both	1,400–7,500/427–2,286	Stinkweed (*Cleomella obtusifolia*)	7,976/3,228
Riparian	Both	Throughout	Arroyo willow (*Salix lasiolepsis*)	Unknown [a]
Disturbed	Both	Throughout	Devil's lettuce (*Amsinkia tessellata*)	1,785/722 [b]

Notes:
[a] Desert transition scrub and riparian plant communities at NAWSCL are being mapped. Acreages of these plant communities at NAWSCL are currently not available.
[b] Disturbed acreage includes only urban exotic vegetation around developed areas.
AMSL = above mean sea level

Sources: Beatley 1976; Brown 1982; Holland 1986; Hickman 1993; Munz 1974; Sawyer and Keeler-Wolf 1995; U.S. Navy 2000.

3.4.6.2 Wildlife

Because of the region's varied topography and diversified habitats, wildlife on NAWSCL is rich and varied. This section provides an overview of wildlife resources occurring on NAWSCL. Because of the relative scarcity of water in the desert, riparian areas and other water sources (even temporary seeps and ponds) tend to concentrate wildlife species, creating an oasis effect. Generally, these areas show the highest wildlife diversity for a given region and represent a valuable resource for wildlife.

Within floristic provinces, there is a variety of wildlife. Many species are wide-ranging (existing in all floristic provinces), while others are restricted to microhabitats within a particular plant community. Many of the more mobile species, especially larger mammals and birds, may use a variety of plant communities, even within a single day. Less mobile species, especially some invertebrates, reptiles, amphibians, and small mammals, may live their entire life cycles within a single plant community or even within a few square meters of habitat.

This section is organized according to evolutionary grouping, including invertebrates, fish, amphibians, reptiles, birds, and mammals. Each section discusses certain common and characteristic species that occur on the Installation.

Invertebrates

Invertebrate species are among the most diverse on NAWSCL, yet they are the least studied. Researchers have been conducting annual invertebrate species surveys on NAWSCL for the last 18 years, and estimate that the Installation may support more than 7,000 species of invertebrates (Pratt 1976). There have been 1,833 species of spiders and insects documented on NAWSCL. The greatest diversity occurs in the Lepidoptera (441 species of moths and butterflies), Diptera (414 species of flies), Hymenoptera (362 species of ants, wasps, and bees), and Coleoptera (263 species of beetles) orders.

Surveys have documented more than 80 species of butterflies at NAWSCL (U.S. Navy 2000). Although none of these butterflies are protected, nine are considered unusual due to their limited distribution (U.S. Navy 2000). At the Installation, these nine butterfly species occur only on the North Range: Pallid dotted-blue (*Euphilotes pallescens*), San Bernardino Mountains blue butterfly (*E. baueri vernalis*), San Emigido blue butterfly (*Plebulina emigdionis*), Boisduval's blue (*Aricia icarioides*), sylvan hairstreak (*Satyrium silvinius silviniusm*), American copper (*Lycaena phlaeas*), Great Basin wood-nymph (*Cercyonis sthenele*), Alpheu's sooty-wing (*Pholisora alpheus*), and arachne checker spot (*Poladryas arachne*) (Pratt and Pierce 1995). Most of these nine butterflies are associated with small areas of habitat. Three in particular may be especially limited: San Bernardino Mountains blue butterfly, San Emigido blue butterfly, and Great Basin wood-nymph.

In addition, several invertebrates exist within the playas and can emerge during periods of standing water after rains. While these habitats support many smaller invertebrates, the most obvious are the larger branchiopods, such as several species of fairy shrimp, including giant fairy shrimp (*Branchinecta gigas*), tadpole shrimp (*Lepiduras lemmoni*), and brine shrimp (*Artemia frandscana*) (U.S. Navy 1996). Through support of independent research efforts during the last 20 years, NAWSCL has developed a list of invertebrate species known to occur on its ranges, including in the sand dune systems and associated sand field plant communities. Many of these could represent endemic species (U.S. Navy 1996).

Fish

There are more than 120 springs, two seeps (i.e., pools formed by water slowly percolating to the surface), and approximately 20 constructed ponds on NAWSCL. However, only five fish species occur on

the Installation. The federally endangered Mohave tui chub has been present on the Installation since it was introduced into Lark Seep in 1971. The other species, mosquito fish (*Gambusia affinis*), bullhead catfish (*Ameiurus* sp.), goldfish (*Carassius auratus*), and largemouth bass (*Micropterus salmoides*), are introduced non-native species. The Mohave tui chub, mosquito fish, and bullhead catfish are known to exist in the Lark Seep System located on the south-central portion of the North Range. Goldfish are present in the Lark Seep System and in a number of constructed ponds. Largemouth bass occur in ponds at Area R on the North Range (U.S. Navy 2000).

Amphibians

Although the desert is characterized as an arid environment, there is enough moisture associated with naturally and artificially occurring water sources to support amphibious species. Amphibians are generally secretive, remaining underground or beneath debris near water; are often active only at night; and usually are confined to permanent water sources. Appendix D includes a list of amphibians that have been identified or that are likely to occur on the Installation. Only two species of native amphibians, the western toad (*Bufo boreas*) and Pacific tree frog (*Pseudacris* [*Hyla*] *regilla*), have been identified. Although the slender salamander (*Batrachoseps* sp.) has not been observed, its habitat is present, and it also may occur at the Installation. During summer 1998, an unsubstantiated report of slender salamanders was made immediately east of the Installation boundary in Great Falls Basin. The red-spotted toad (*Bufo punctatus*) has been documented just east of the NAWSCL boundary in Great Falls Basin. Bullfrogs (*Rana catesbeiana*) have been found in the North Channel of the Lark Seep System as introduced exotic species.

Reptiles

Thirty-four species of reptiles have been identified at NAWSCL, including a variety of lizards and snakes. The federally threatened desert tortoise occurs on the Installation on both the North and South Ranges in high densities in suitable habitat, but with relatively higher densities on the South Range. Some of the lizard species include the desert iguana (*Dipsosaurus dorsalis*), zebra-tailed lizard (*Callisaurus draconoides*), desert collared lizard (*Crotaphytus insularis*), desert spiny lizard (*Sceloporus magister*), side-blotched lizard (*Uta stansburiana*), long-tailed brush lizard (*Urosaurus graciosus*), desert horned lizard (*Phrynosoma platyrhinos*), and western whiptail (*Cnemidophorus tigris*). Gilbert's skink (*Plestiodon gilberti*) is common in the desert riparian areas. Some of the snake species include the red racer (*Masticophis falgellum*), western patch-nosed snake (*Salvadora hexalepis*), glossy snake (*Arizona elegans*), gopher snake (*Pinesnare melanoleucus*), common kingsnake (*Lampropeltis getulus*), long-nosed snake (*Rhinocheilus lecontei*), night snake (*Hypsiglena torquata*), sidewinder (*Crotalus cerastes*), and the Mojave rattlesnake (*C. scutulatus*). Less common species include the chuckwalla (*Sauromalus ater*) and Panamint alligator lizard (*Elgaria* [*Gerrhonotus*] *panamintina*) (U.S. Navy 1996). Two snapping turtles (*Chelydra serpentina*) have been found in the Lark Seep channels as an introduced exotic species. Reptile species known to occur on the NAWSCL ranges are listed in Appendix D (U.S. Navy 2000).

Birds

To date, more than 350 different bird species, including the federally threatened Inyo California towhee, have been identified on NAWSCL. The Audubon Society conducts an annual Christmas bird count on the North Range, and since 1988, has completed more than 800 surveys at the wastewater ponds in the southern portion of George Range. Appendix D presents a listing of bird species that have been identified on NAWSCL. The majority of birds occurring at NAWSCL are migratory species. Some of the bird species identified as common or fairly common at NAWSCL (based on Blue and Moore 1995) are described for the following habitat types: desert scrub, alkali sink, scrub woodland, riparian, ponds, and disturbed.

Desert scrub habitat covers most of NAWSCL and includes these plant communities: creosote bush scrub, Mojave mixed woody scrub, sagebrush scrub, blackbrush scrub, shadscale scrub, hopsage scrub, Mojave wash scrub, Mojave sand field, and desert holly scrub. Many bird species occurring here can also be found within other habitat types. Species indicative of this habitat include sage sparrow (*Amdhispiza. belli*), Le Conte's thrasher (*Toxostoma lecontei*), greater roadrunner (*Geococcyx californianus*), and loggerhead shrike (*Lanius ludovicianus*).

Alkali sink habitat includes the alkali sink scrub, saltbush scrub, and vernal playa plant communities. Most of the bird species found here are migratory and usually found only in the alkali sink habitat when standing water is present, typically only during the winter. As such, these seasonal wet areas are important habitat for many birds. Many of the smaller waterfowl species, such as ducks, are occasionally observed in the pond habitat described in subsequent sections. The federally threatened western snowy plover (*Charadrius nivosus nivosus*) is an uncommon migrant and an extremely rare summer resident species in this habitat. Other species associated with alkali sink habitat are the black-necked stilt (*Himantopus mexicanus*), American avocet (*Recurvirostra americana*), spotted sandpiper (*Actitis macularia*), western sandpiper (*Calidris mauri*), long-billed dowitcher (*Limnodromus scolopaceus*), and Wilson's phalarope (*Phalaropus tricolor*).

Scrub woodland habitat includes those plant communities that generally are located above 5,000 feet (1,524 meters) AMSL, such as Joshua tree woodland, Great Basin mixed scrub, pinyon woodland, and desert transition scrub. In addition to the many birds occurring in the desert scrub habitat, the following species are fairly common: Anna's hummingbird (*Calypte anna*), mountain chickadee (*Poecile gambeli*), black-headed grosbeak (*Pheucticus melanocephalus*), and savannah sparrow (*Passerculus sandwichensis*).

Riparian areas have important habitat features, including water availability and relatively lush, dense vegetative cover. Riparian habitat is present along washes, around seeps and springs, and adjacent to ponds wherever sufficient water is near the surface to sustain woody trees and dense shrubs. These riparian corridors and "oases" of vegetation provide important migration corridors for neotropical migrants. The federally listed endangered southwestern willow flycatcher (*Empidonax traillii extimus*) is a possible migrant, with no nesting documented on NAWSCL. However, the species has been recorded as breeding approximately 50 miles (80 kilometers) west of the Installation. Common and characteristic bird species observed in this habitat type include the federally listed threatened Inyo California towhee, black phoebe (*Sayornis nigricans*), yellow warbler (*Dendroica petechia*), yellow-rumped warbler (*D. coronata*), Wilson's warbler (*Wilsonia pusilla*), and dark-eyed junco (*Junco hyemalis*). Less common species include Pacific-slope flycatcher (*Empidonax. difficilis*) and MacGillivray's warbler (*Oporornis tolmiei*), both of which are observed on rare occasions.

Aquatic/pond habitat at NAWSCL provides a source of more permanent surface and open water and vegetation for resting, feeding, and nesting. Common and characteristic bird species dependent on aquatic/pond habitat include the eared grebe (*Podiceps nigricollis*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), American coot (*Fulica americana*), marsh wren (*Cistothorus palustris*), red-winged blackbird (*Agelaius phoeniceus*), and yellow-headed blackbird (*Xanthocephalus xanthocephalus*).

Non-native vegetation found on the golf course and in residential and developed areas represents the disturbed habitat type. There are several bird species that commonly reside in this habitat type, but that are not necessarily limited to disturbed areas. These include killdeer (*Charadrius vociferus*), mourning dove (*Zenaida macroura*), Anna's hummingbird, northern flicker (*Colaptes auratus*), western kingbird (*Tyrannus verticalis*), barn swallow (*Hirundo rustica*), American robin (*Turdus mirgratorius*), loggerhead shrike, European starling (*Sturnus vulgaris*), yellow-rumped warbler, white-crowned sparrow (*Zonotrichia*

leucophrys), dark-eyed junco, western meadowlark (*Sturnella neglecta*), Brewer's blackbird (*Euphagus cyanocephalus*), brown-headed cowbird (*Molothrus ater*), and house finch (*Carpodacus mexicanus*).

Mammals

NAWSCL ranges support more than 80 mammal species. Fourteen bat species have been identified, including seven species of *Myotis* as well as the western pipistrelle (*Parastrellus hesperus*), big brown bat (*Eptesicus fuscus*), spotted bat (*Euderma maculatum*), Townsend's big-eared bat (*Corynorhinus townsendii*), pallid bat (*Antrozous pallidus*), Mexican free-tailed bat (*Tadarida brasiliensis*), and western mastiff bat (*Eumops perotis*).

Many small mammals, such as several species of kangaroo rat (*Dipodomys* spp.), live in the driest portions of the desert, deriving all of the water they need from the seeds they eat. Through much of the desert, Merriam's kangaroo rat (*D. merriami*) is the most abundant small mammal, although the Panamint kangaroo rat (*D. panamintinus*) and the Great Basin or chisel-toothed kangaroo rat (*D. microps*) can also be found in saltbush communities. Other common small mammals include the state listed Mohave ground squirrel (*Xerospermophilus mohavensis*), Botta's pocket gopher (*Thomomys bottae*), several species of pocket mouse (*Perognathus* spp. and *Chaetodipus* spp.), deer mouse (*Peromyscus maniculatus*), canyon mouse (*P. crinitus*), cactus mouse (*P. eremicus*), brush mouse (*P. boylii*), the carnivorous southern grasshopper mouse (*Onychomys torridus*), and a species of vole (*Microtus* sp.). Abundant in somewhat wetter areas is the western harvest mouse (*Reithrodontomys megalotis*). Less common is the desert shrew (*Notiosorex crawfordi*), with only one individual recorded on NAWSCL. Other common mammals in the desert include the desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), and California ground squirrel (*Spermophilus beecheyi*). The pinyon pine and other woodlands support an additional mix of small mammals, including the Panamint chipmunk (*Neotamias panamintinus*), pinyon mouse (*Peromyscus truei*), dusky-footed woodrat (*Neotoma fuscipes*), common porcupine (*Erethizon dorsatum*), and striped skunk (*Mephitis mephitis*) (U.S. Navy 1989b, 2000).

A number of wide-ranging carnivores are also relatively common in the desert, including coyote (*Canis latrans*), desert kit fox (*Vulpes macrotis*), long-tailed weasel (*Mustela frenata*), American badger (*Taxidea taxus*), mountain lion (*Puma concolor*), and bobcat (*Lynx rufus*) (U.S. Navy 1989b, 2000). The common gray fox (*Urocyon cinereoargenteus*) occurs in the pinyon pine and other woodlands. Larger mammals include mule deer, Nelson's bighorn sheep, feral burros, and feral horses (U.S. Navy 1989a, 1989b, 1997). Appendix D lists the mammal species known to occur on NAWSCL.

3.4.7 Federally Listed Threatened and Endangered Species

3.4.7.1 Plant Species

There are currently no known occurrences of federally listed threatened or endangered plant species on NAWSCL. However, some areas of the Installation contain habitat that could support such listed species. One noteworthy example is the Lane Mountain milk-vetch (*Astragalus jaegerianus*) that was listed as an endangered species by USFWS on October 6, 1998 (USFWS 1998a). This species has been identified approximately 4 miles (6.4 kilometers) south of NAWSCL. Potential habitat is located on the South Range in Superior Valley and on the gentle slopes bordering the valley (Bagley 1986). Focused surveys have been conducted in this area of the Installation, but no occurrences of the Lane Mountain milk-vetch have been confirmed to date.

3.4.7.2 Wildlife Species

Three wildlife species listed by USFWS as threatened or endangered are resident species on NAWSCL: Mohave tui chub, desert tortoise, and Inyo California towhee. In addition, several nonresident threatened or endangered bird species occur on-installation as transients or migrants. Resident and nonresident threatened and endangered wildlife species known to occur on NAWSCL are listed in Table 3.4-2.

Table 3.4-2
Federally and State Listed Threatened and Endangered Wildlife Species on NAWSCL

Species Common Name (Scientific Name)	Status Federal/ State	Habitat on NAWSCL	Occurrence	Range
Mohave tui chub (*Siphateles [Gila] bicolor mohavensis*)	E/E	Lark Seep System, G-1 Seep	Resident	North
Desert tortoise (*Xerobates [Gopherus] agassizii*)	T/T	Creosote bush scrub, saltbush scrub, and Joshua tree woodland; designated critical habitat on South Range	Resident	Both
Inyo California towhee (*Pipilo crissalis eremophilus*)	T/E	Riparian habitats in the southern Argus Range; designated critical habitat on North Range	Resident	North
Bald eagle (*Haliaeetus leucocephalus*)	FD/E	Migrate over most habitats	Transient, extremely rare	North
Western snowy plover (*Charadrius nivosus nivosus*)[(a)]	T/-	Wastewater Treatment Facility ponds, G-1 Seep	Uncommon migrant, extremely rare summer resident	North
Southwestern willow flycatcher (*Empidonax traillii extimus*)	E/E	Riparian habitats, the housing area, and golf course	Transient, fairly common	North
Least Bell's vireo (*Vireo bellii pusillus*)	E/E	Riparian habitats, the housing area, and golf course	Migrant, extremely rare	North
Mohave ground squirrel (*Xerospermophilus mohavensis*)	-/T	Alluvial fans adjacent to hills and mountains, where the sandy soils tend to be deep	Resident	Both

Notes:
[a] Only the Pacific coastal population of western snowy plover is listed. Plovers occurring on NAWSCL are considered to be part of an unlisted inland population.
E = Endangered
T = Threatened
FD = Federal Delisted

Sources: CDFG 2011; USFWS 1996, 2009a; U.S. Navy 1999, 2000.

The term "migrant" refers to a species that occurs at the Installation for longer periods during migration or that may winter at the Installation. The term "transient" refers to a species that occurs at the Installation typically for short duration while en route to another destination during migration. "Vagrant" refers to a species whose occurrence in the area is extremely rare or accidental; these species do not typically occur at NAWSCL.

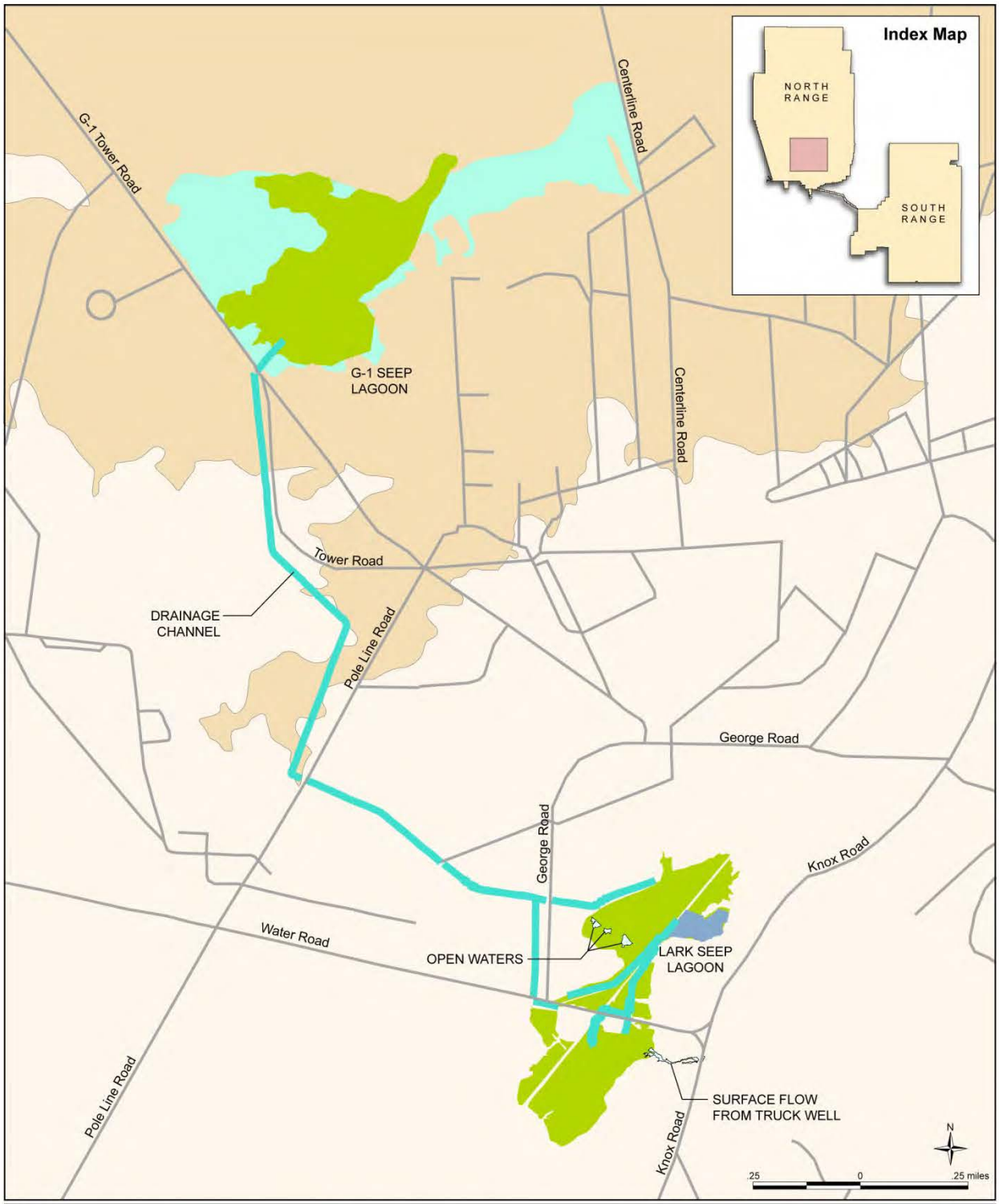
Mohave Tui Chub

The Mohave tui chub is a federally listed endangered fish species (listed October 13, 1970). The known distribution of the Mohave tui chub on NAWSCL is shown in Figure 3.4-3. Mohave tui chub occurred in large lakes of the Great Basin region during the Pleistocene. Some 11,500 years ago, retreating ice caps resulted in the loss of once extensive aquatic systems, and the chub became restricted to more confined habitats. They were typically associated with deep pools and slough-like areas, where they were formerly found along the Mojave River. It is likely that Mohave tui chub no longer exists in natural habitats within its native range. Hybridization with the introduced arroyo chub (*Gila orcutti*) has contributed to population declines in many areas. Genetically pure populations now occur only in refugia (that is, habitats that are maintained in a more or less stable state) located at NAWSCL, as well as at other off-installation areas such as MC Spring and Soda Springs, along the western shore of Soda Lake, at the Camp Cady Wildlife Area, along the Mojave River channel west of Afton Canyon, at the Desert Research Station in Hinkley, and at the California Information Center in Barstow. Mohave tui chub feed primarily on zooplankton and benthic invertebrate feeders (U.S. Navy 2000).

In 1971, 400 Mohave tui chub were introduced from the Soda Springs population (Lake Tuendae, California) into the Lark Seep System at NAWSCL. The population was augmented with another 75 individuals in 1976. In 2008, a group of 541 Mohave tui chub were translocated from NAWSCL to the Lewis Center site in Apple Valley, California. As water levels rose through the years, the NAWSCL population has increased and expanded in range. Mohave tui chub currently occur throughout the Lark Seep System, which consists of two seeps (Lark Seep and G-1 Seep) and about 5 miles (8 kilometers) of interconnecting channels. Estimates in 2010 place the population at 4,571 to 5,133 Mohave tui chub (Desert Mountain RC&D Council 2011). At the G-1 Seep, Mohave tui chub occurs in a small area where the channel terminates into the seep. Habitat within the slow-flowing channel likely mimics the Mohave tui chub's natural Mojave River habitat, and may help buffer the fish from changes in water temperature and quality.

Habitat-enhancing activities have proceeded under the provisions of the BO (1-8-97-F-15) issued by USFWS (discussed in Section 3.4.3.1). Enhancement activities have included excavation of deep cattail-free areas and the creation of shallow slopes along the channel to facilitate the growth of emergent vegetation and to slow the flow of water through the system. Both of these aspects are important components of chub habitat. Habitat enhancement activities have involved widening and deepening 250 feet (76 meters) of the channels in the Lark Seep System. The cattails are not expected to grow in the deeper waters of the central portion of the channel.

No critical habitat has been designated for the Mohave tui chub at NAWSCL; however, managing the channel vegetation to maintain and enhance Mohave tui chub habitat has been a priority for NAWSCL. The seep system occurs because of the rising groundwater table resulting from seepage from the city of Ridgecrest's wastewater treatment ponds, and, to a lesser extent, from the Installation's golf course and housing area. The current system of channels was excavated during the 1960s to prevent facility damage from the rising groundwater in the seeps. The seep lagoons and channels support cattails that, if not cleared, form dense stands that block the flow of water and reduce habitat quality for the Mohave tui chub. In an effort to maintain the viability of the chub population and habitat, NAWSCL is working to collect up-to-date hydrology and geology information on the Lark Seep System. These data will be used to enhance the system to provide a long-term, low-maintenance refugium for the chub.



Distribution of Mojave Tui Chub on NAWSCL

Figure 3.4-3

Desert Tortoise

In August 1989, USFWS listed the Mojave population (west of the Colorado River) of the desert tortoise as endangered under the emergency listing provisions of the ESA. The State of California listed the species as threatened in June 1989, and USFWS formally listed the desert tortoise as threatened in April 1990.

On February 8, 1994, the USFWS designated approximately 6.4 million acres of critical habitat for the Mojave population of the desert tortoise in portions of California, Nevada, Arizona, and Utah (59 Federal Register 5820), which became effective on March 10, 1994. A portion of the Superior-Cronese Critical Habitat Unit, one of four units of Critical Habitat designated by the USFWS in the Western Mojave Recovery Unit, is in the southern portion of the South Range (USFWS 1994). The southern portion of the South Range is an area known to contain relatively high densities of tortoises.

Designated critical habitat for the desert-tortoise encompasses portions of the Mojave and Colorado Deserts that contain the primary constituent elements and focuses on areas that are essential to the species' recovery. The critical habitat unit boundaries were based on the proposed Desert Wildlife Management Areas (DWMA) in the Draft Recovery Plan for the Desert Tortoise (Mojave Population) (USFWS 1993). Because the boundaries were drawn to conform to accepted principles of conservation biology (USFWS 1993), the areas may contain "unsuitable" habitat in addition to the surrounding "suitable" habitat. The term "suitable" generally refers to habitat that provides the constituent elements of nesting, sheltering, foraging, dispersal, and/or gene-flow.

The Draft Recovery Plan proposed 14 Desert Wildlife Management Areas within 6 recovery units within the range of the desert tortoise. The USFWS used the DWMAs as the basis for the critical habitat units because:

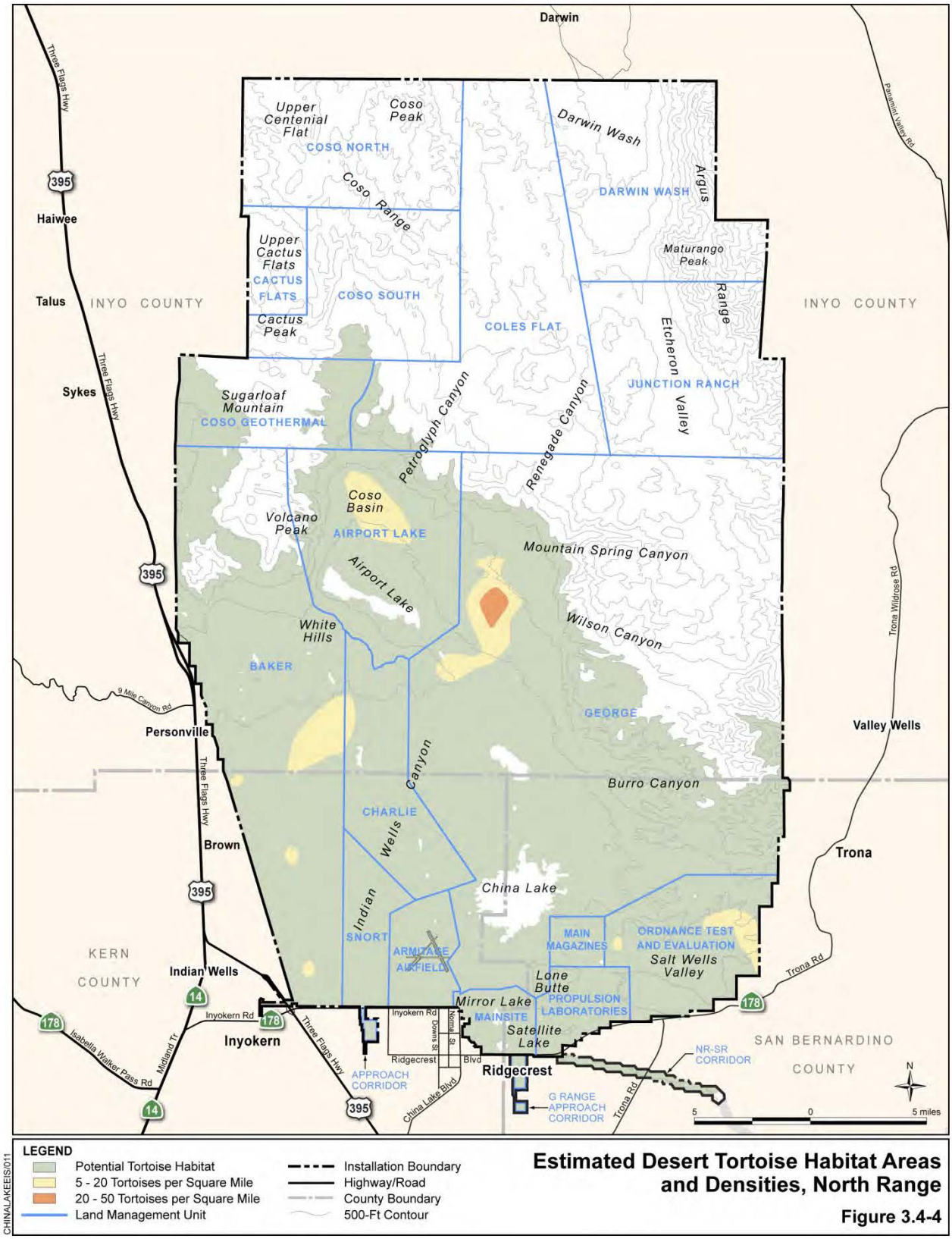
1. The Draft Recovery Plan's conservation strategy was based upon the best available information on desert tortoises gathered and analyzed over the past 20 years;

2. The Draft Recovery Plan represented an in-depth analysis of the conservation needs of the desert tortoise;

3. The areas recommended as DWMAs were proposed by experts familiar with the species and its habitat based on the principles of conservation biology; and

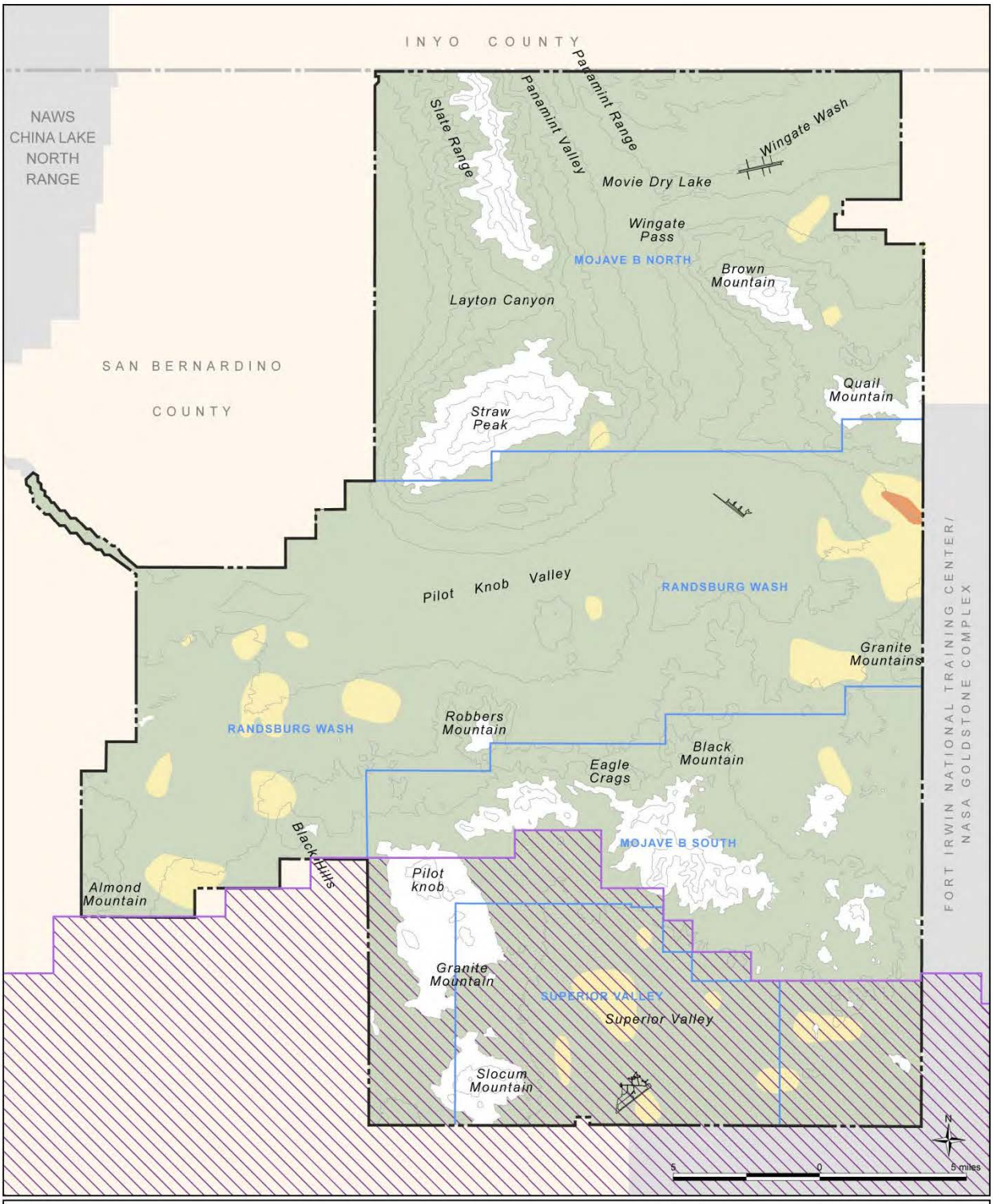
4. Use of the DWMAs is consistent with the USFWS's other conservation efforts.

At NAWSCL, desert tortoise occurs in creosote bush scrub and saltbush scrub communities at elevations ranging from 1,660 feet (506 meters) to approximately 4,000 feet (1,219 meters) AMSL. Surveys of the North Range and South Range conducted in 1990 and 1991 demonstrated that the highest density desert tortoise habitat tends to be on gentle slopes (bajadas) in creosote bush scrub with sandy-loam to pebbly soils (Kiva Biological Consulting 1991). The desert tortoise occurs throughout much of the suitable habitat on NAWSCL, and has been documented in the following LMUs: Airport Lake, Baker Range, Charlie Range, George Range, Coso Geothermal, Mojave B North, Mojave B South, Randsburg Wash, and Superior Valley. Desert tortoise densities on NAWSCL are shown in Figures 3.4-4 and 3.4-5. Subsequent studies conducted in 2004 confirmed widespread occurrence of desert tortoise over the North and South Ranges (Kiva Biological Consulting and Epsilon Systems Solutions 2004). Additionally, NAWSCL has supported the USFWS annual Line Distance Sampling of the desert tortoise rangewide population.



Estimated Desert Tortoise Habitat Areas and Densities, North Range

Figure 3.4-4



Estimated Desert Tortoise Habitat Areas, Densities, and Critical Habitat, South Range
Figure 3.4-5

On the North Range, surveys identified desert tortoise abundance of greater than five tortoises per square mile in three regions on NAWSCL: Coso Basin (north and east of Airport Lake), in multiple areas of Baker Range and Charlie Range, and the eastern portion of Salt Wells Valley (see Figure 3.4-4). On the South Range, survey data estimate abundance of greater than five tortoises per square mile in the following regions: the west end of Pilot Knob Valley, the east end of Pilot Knob Valley, and the Superior Valley and Wingate Wash areas (see Figure 3.4-5). In 2005, surveys of the North Range were conducted to confirm the abundance estimates, and confirmed only one area, the Fuel-Air Explosives target area on George Range, as supporting a high-density of desert tortoise (Applied Biological Consulting 2005). In 2008, surveyed areas in/near Bull pup and PMT target areas within George Range covering an area in excess of 9,000 acres (3,642 hectares) revealed that over 60 percent of the area had densities of 5 to 20 desert tortoises per square mile and confirmed an area with densities of 20 to 50 desert tortoises per square mile near the PMT target area (Southern Sierra Research Station 2010). In 2010, focused desert tortoise surveys were conducted at seven locations on the North Range, and documented one live desert tortoise and several burrows at all but one of the seven survey locations (Southern Sierra Research Station 2011). In 2011, a 100 percent coverage survey of 877 acres (355 hectares) of land in the Shrike Target area within George Range was completed. The survey effort was directed at verifying 2005 desert tortoise density estimates. The survey determined that desert tortoise densities were 55 desert tortoises per square mile; this is a higher density than previously estimated at 20 to 50 desert tortoises per square mile (Epsilon 2011a). The desert tortoise critical habitat designated by USFWS in the southern portion of the South Range is also shown in Figure 3.4-5 (USFWS 1994).

Inyo California Towhee

USFWS listed the Inyo brown towhee as a threatened species on August 3, 1987 and wrote a recovery plan that designated critical habitat on NAWSCL lands in the Mountain Springs Canyon and Wilson Canyon areas in 1998. This subspecies is now recognized as the Inyo California towhee (*Pipilo crissalis eremophilus*) (USFWS 2008). USFWS published a 5-year review of the species' listing status, with recommendations for delisting of the Inyo California towhee (USFWS 2008). The Inyo California towhee is the only federally listed bird species resident on NAWSCL.

USFWS published a Draft Post-Delisting Monitoring Plan for the Inyo California Towhee in November 2013 (USFWS 2013b). Based on public comments received between November 4, 2013 and January 3, 2014, USFWS will prepare a Final Post-Delisting Monitoring Plan. The primary goal of post-delisting monitoring is to monitor the species to ensure the status does not deteriorate, and if a substantial decline in the species (numbers of individuals or populations) or an increase in threats is detected, to take measures to halt the decline so that re-proposing it as a threatened or endangered species is not needed. The numerical goal of a minimum of 400 pairs sustained over 5 years is the principal criterion for delisting in the recovery plan. This criterion has been reached and exceeded for many years, and is one of the main reasons for the proposed delisting of the species.

The Inyo California towhee is a medium-sized, sparrow-like songbird. Territories are centered around desert riparian vegetation, but range possibly up to 0.5 mile (0.8 kilometer) into the adjacent upland plant communities (LaBerteaux 1989, 1994). The upland plant community surrounding the riparian habitat may be either creosote bush scrub or Mojave mixed woody scrub (Holland 1986), with or without a Joshua tree (*Yucca brevifolia*) overstory. Territory size usually ranges from 25 to 62 acres (10 to 25 hectares). The size decreases during the breeding season to about 20 to 49 acres (8 to 20 hectares) (USFWS 1998a; U.S. Navy 1989a, 1989b).

Inyo California towhees are a relic of a species that was once widespread in the southwestern U.S. and northern Mexico (Cord and Jehl 1979). This subspecies is thought to have become restricted to mountain areas in the northern Mojave Desert as a result of climatic changes beginning in the Pliocene era. It is now restricted to riparian habitats in the southern Argus Mountain Range of Inyo County (Figure 3.4-6).

Data gathered during the spring and summer of 1998 (following an above-average rainfall year) indicate that the Inyo California towhee's range extended about 4 miles farther north than previously believed (LaBerteaux and Garlinger 1998), although towhees have not been seen in this area since that time. Estimates indicated a population of approximately 570 adult Inyo California towhees in 1998. Of the entire habitat of Inyo California towhee, 69 percent is on the North Range within the eastern edge of the George Range LMU. The remaining habitat is on adjacent BLM and State lands (Cord and Jehl 1979; USFWS 2008). While a comprehensive range-wide surveys has not been completed since 1998, small-scale site specific surveys have been performed nearly annually; however, NAWSCL continues to seek funding to perform a comprehensive range-wide census.

The primary threat to Inyo California towhee is the degradation or destruction of riparian habitat, and water diversions that have occurred on off-installation lands. On NAWSCL lands, potential for habitat degradation results primarily from burros and horses using springs and grazing on native vegetation in upland areas (USFWS 2008). The efforts by the BLM and NAWSCL to protect, improve, and expand the towhee's riparian habitat have resulted in as much as a four-fold increase in towhee abundance between 1987 when the species was listed and 2011 (USFWS 2013b).

Nonresident Bird Species

Three federally listed nonresident birds and one federally delisted nonresident bird that remains state listed occur as migrants with varying degrees of abundance at NAWSCL: the bald eagle (*Haliaeetus leucocephalus*), least Bell's vireo (*Vireo bellii pusillus*), willow flycatcher, and western snowy plover.

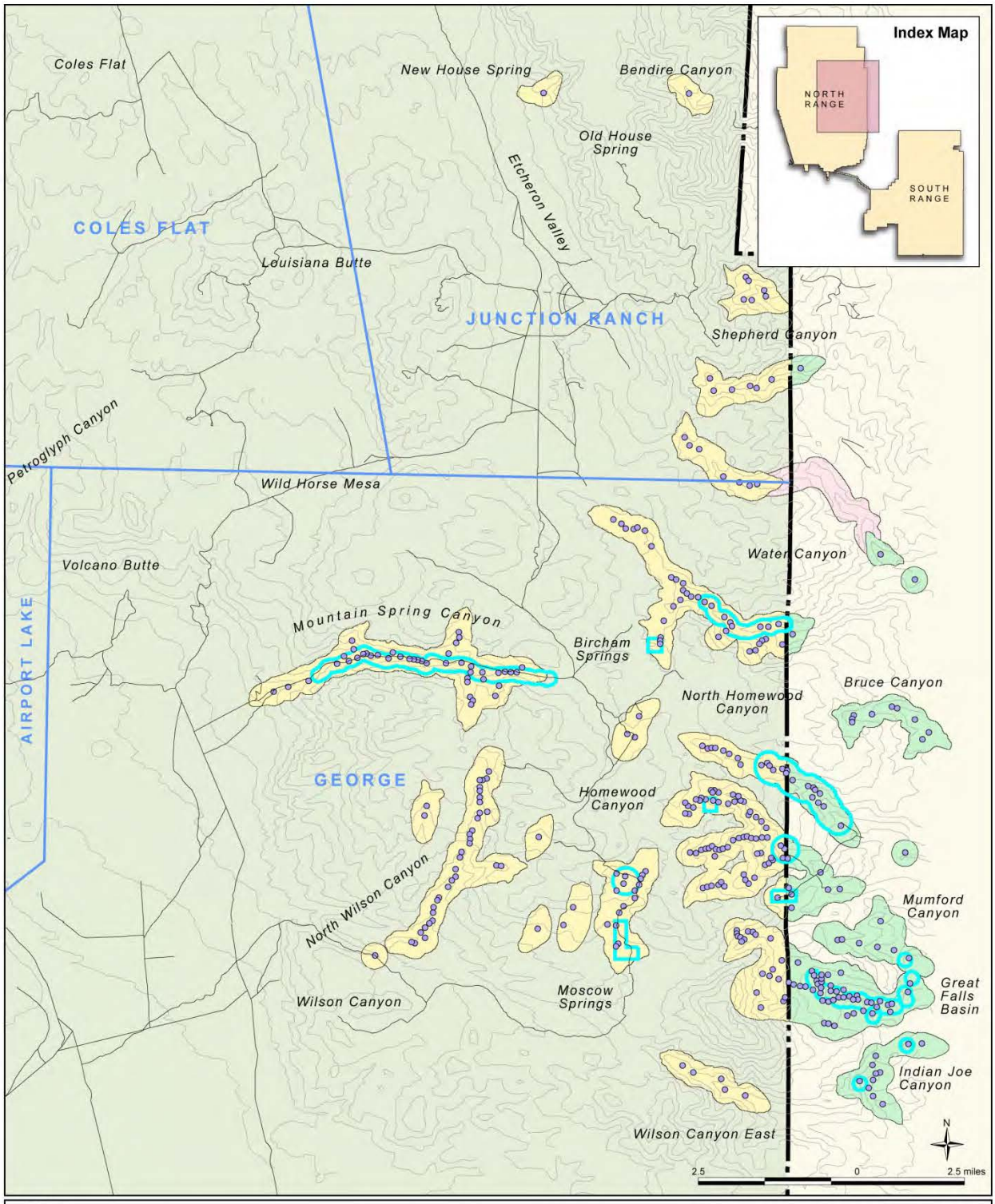
The bald eagle was delisted from the federal endangered species list on August 9, 2007, but remains on the California endangered species list and remains protected under the following federal regulations: the Bald and Golden Eagle Protection Act, the MBTA, and the Lacey Act. Bald eagles occur on the Installation only as extremely rare transients during migration.

The willow flycatcher is a fairly common transient during migration, and the least Bell's vireo is a an extremely rare migrant that may overwinter on NAWSCL. Willow flycatchers migrating through the Installation could belong to several subspecies, including the endangered southwestern willow flycatcher. While documented observations of least Bell's vireo and southwestern willow flycatcher are extremely rare, there has not been a systematic census of the riparian habitats on NAWSCL to determine if these species nest on the Installation.

The western snowy plover is uncommon during spring at the wastewater treatment facility ponds; however, USFWS does not consider the snowy plovers on NAWSCL to be members of the federally listed coastal population.

3.4.8 Riparian and Other Water-Related Habitats

Riparian and water-related habitats are defined as areas that are inundated or saturated by surface or groundwater, and often support vegetation adapted for life in saturated soil conditions. Riparian and water-related habitats serve important biological functions such as providing nesting, breeding, foraging, and spawning habitat for an aquatic or upland species.



Inyo California Towhee Distribution on NAWSCL and BLM Land

Figure 3.4-6

NAWSCL contains several major playas (dry lake beds) and as many as 80 smaller playas, ranging from hundreds of acres to less than 1 acre (0.4 hectare). The major playas on the North Range are China Lake, Mirror Lake, Satellite Lake, Paxton Ranch Playa, and Airport Lake. Movie Lake is the major playa on the South Range (Glen Lukos Associates 1998). Some playas provide habitat for a number of species such as fairy shrimp (NAWSCL special status species). When a playa is inundated with water, eggs hatch, and fairy shrimp become a food source for birds and other wildlife that are able to utilize this intermittent food supply. These playas provide an ephemeral water source for migrating birds, thus enhancing their chances for successful migration. Birds most likely to use this resource are shorebirds. The majority of the dry lake beds, especially the smaller playas, are not used, or are infrequently used, for military purposes.

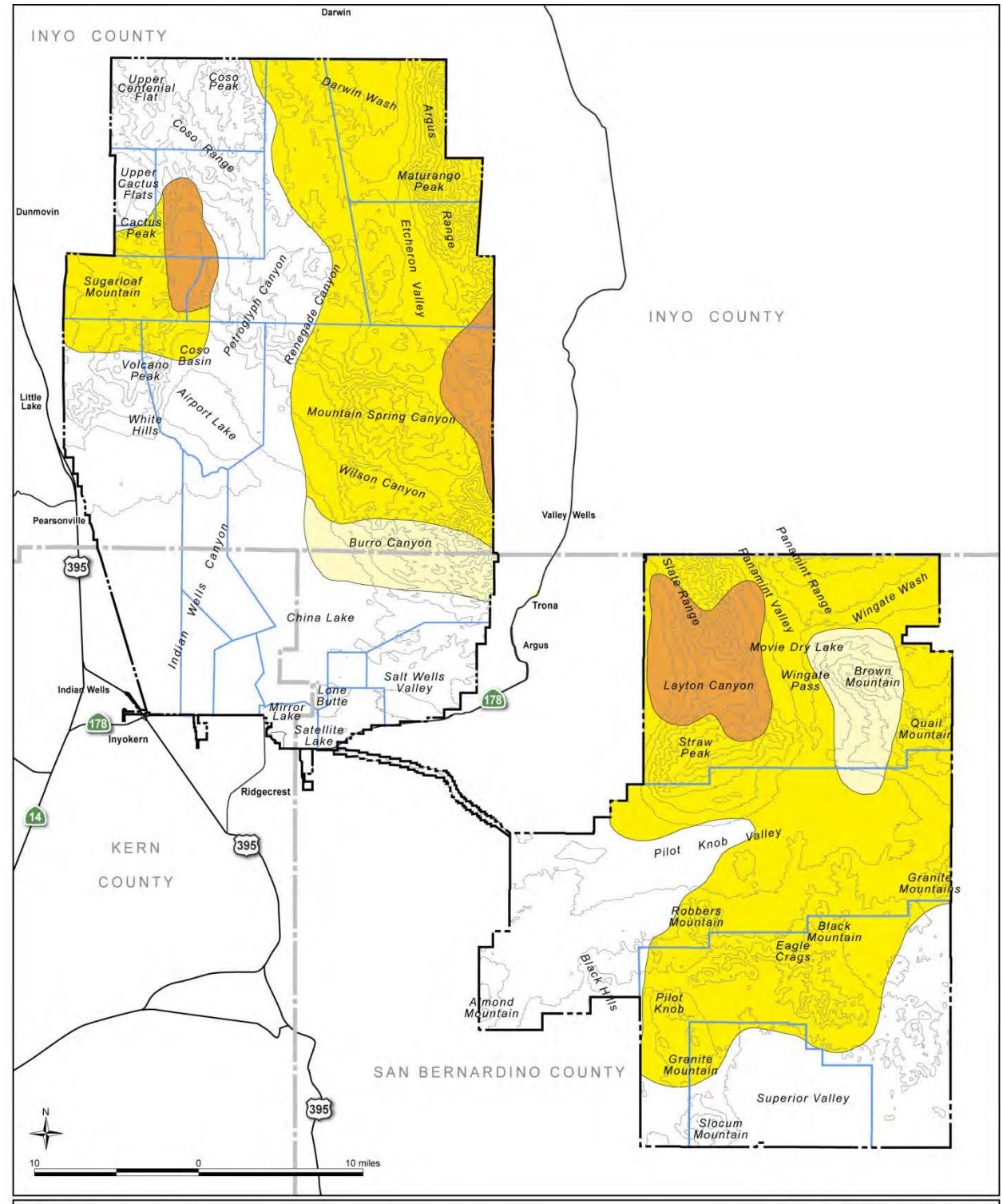
Jurisdictional wetlands have not been identified at NAWSCL; however, more than 120 springs have been identified at NAWSCL. These springs range from small areas with almost imperceptible discharge to areas supporting extensive riparian vegetation with discharges of up to 6 gallons (23 liters) per minute (Glen Lukos Associates 1998). A few of these springs may disappear and reappear, depending on rainfall. Water is currently extracted for domestic use from Coso Cold Springs for the Darwin community and from New House Spring, Old House Spring, and Tennessee Spring in support of the Junction Ranch test site. Seeps at NAWSCL consist of the Lark Seep System and the G-1 Seep system, located near the southern end of the North Range. Subsurface percolated water from the wastewater treatment facility ponds appears at the ground surface at Lark Seep, the Bologna Pool, and along the channels leading north to G-1 Seep. Dominant vegetation types in these seeps include cattail marsh, tule marsh, and alkali meadow (Glen Lukos Associates 1998).

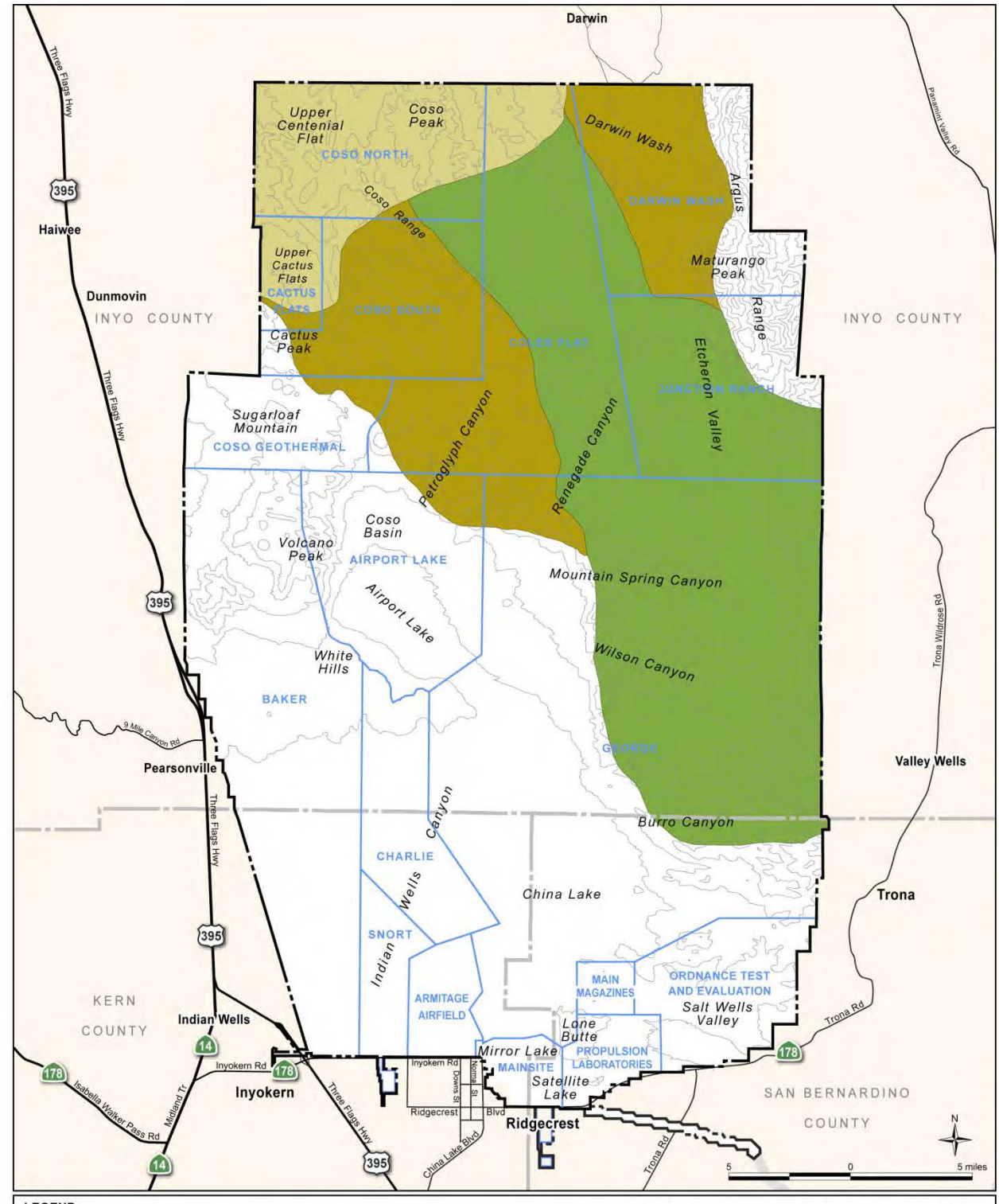
Past activities that may have disturbed riparian habitats and surface water features at NAWSCL include historic water withdrawal from springs to support mining, grazing, and human uses. Wild horses, wild burros, and cattle have degraded vegetation along riparian corridors, thereby increasing sedimentation, water temperatures, and nutrient load. Cattle grazing on NAWSCL was terminated in 2000. As part of the INRMP, riparian resources on NAWSCL have been protected and enhanced by the DoN over the years. Such activities have included the fencing of springs, and periodic removal and placement of feral horses and burros into adoption programs, to decrease access and impacts to riparian zones.

3.4.9 Wild Horse and Burro Management

Management of wild horses and burros by the DoN, in conjunction with the BLM, occurs under three Federal authorities: (1) the Sikes Act, 16 U.S.C. §§ 670a-670o; (2) the Federal Lands Policy and Management Act, P.L. 94-579; and (3) the Wild Free Roaming Horses and Burros Act, P.L. 92-195, 16 U.S.C. § 1331 et seq. (as implemented at 43 CFR Part 4700). These laws prescribe the development of resource management plans for wild horses and burros occurring on lands managed by the DoN.

Wild horses and burros have existed on NAWSCL and surrounding lands since early miners and ranchers imported them in the late 1800s, and were either released or escaped from their intended use to become feral animals. Wild burros presently occur on both the North and South Ranges (Figure 3.4-7). Horses continue to graze primarily in the higher elevations of the Coso and Argus Mountain areas on the North Range (Figure 3.4-8). The number of wild horses and burros increased dramatically between the late 1960s and early 1980s. Significant environmental damage occurred through habitat degradation associated with unmanaged wild horse and burro grazing. Wild horses and burros reduce the numbers and diversity of plants and degrade wildlife habitat, especially near riparian areas and at springs. In addition, the structure of cryptogrammic crusts (soils with a high potential to support vegetation) can be damaged through trampling and compaction. Once the surface of these soil crusts is disturbed, reestablishing vegetation becomes difficult. The associated effects on NAWSCL habitats due to overuse by horses and burros includes the trampling and compaction of soils, increased soil erosion, often severe


INYO COUNTY
Darwin
Upper Centennial Flat
Coso Peak
Coso Range
Darwin Wash
Argus Range
Maturango Peak
Upper Cactus Flats
Cactus Peak
Dunmovin
Sugarloaf Mountain
Petroglyph Canyon
Renegade Canyon
Eichoron Valley
Coso Basin
Volcano Peak
Airport Lake
White Hills
Little Lake
Mountain Spring Canyon
Wilson Canyon
Pearsonville
Burro Canyon
Indian Wells Canyon
China Lake
Valley Wells
Trona
Argus
Panamint Range
Slate Range
Panamint Valley
Wingate Wash
Movie Dry Lake
Layton Canyon
Wingate Pass
Brown Mountain
Quail Mountain
Straw Peak
Salt Wells Valley
Lone Butte
Mirror Lake
Satellite Lake
Indian Wells
Inyokern
Ridgecrest
KERN COUNTY
Pilot Knob Valley
Granite Mountains
Robbers Mountain
Black Mountain
Eagle Crags
Black Hills
Almond Mountain
Pilot Knob
Granite Mountain
Superior Valley
Slocum Mountain
SAN BERNARDINO COUNTY
395
178
14
N
10
0
10 miles
LEGEND
Low Density
Medium Density
High Density
500-Ft Contour
Land Management Unit
Installation Boundary
CHINALAKEEIS/027
General Distribution of Feral Burros on NAWSCL
Figure 3.4-7



General Distribution of Feral Horses on NAWSCL, North Range

Figure 3.4-8

restriction of native plant species revegetation, and the overall reduction of plant and animal species diversity (U.S. Navy 1981). The increased numbers of horses and burros also created safety concerns for pilots and motorists.

The Installation's burro removal program was implemented in 1980 and a horse removal program was implemented the following year. Currently, the horse and burro removal programs are being conducted on an annual basis, per the 2010 MOA between NAWSCL and BLM. To aid in the removal of live burros, NAWSCL conducts an annual gathering on its ranges in cooperation with BLM. Since 1981, more than 10,400 burros have been removed from NAWSCL ranges. NAWSCL also has removed more than 3,500 wild horses since 1981. Captured horses and burros are placed into the BLM's adoption program.

Currently, NAWSCL has an estimated wild horse population of approximately 450–500 animals in the Centennial Herd Management Area and an estimated burro population of approximately 150 animals. The 2014 INRMP incorporates overall direction and strategy for managing wild horses and burro populations on NAWSCL. Management goals with respect to feral horses and burros include:

- Maintain the Centennial Horse Herd within a range of 100-168 animals, consistent with the appropriate management level (AML) of 168 horses. AML is the number of wild horses and burros that can be sustained in a thriving natural ecological balance with other multiple-uses. It should be noted that 100-168 is considered an optimal range for the total number of wild horses on NAWSCL. As noted above, the actual number is considerably higher, and as a practical matter the DoN anticipates that it will remain so for the foreseeable future. While 100-168 is considered a goal as a formal matter, the recent practice of only removing young, adoptable horses does not allow for removal of enough animals to effectively reduce the herd size. As a result of this practice, in conjunction with the DoN's reliance on humane management practices, recruitment of foals into the herd currently exceeds the DoN's ability to gather sufficient animals to keep up with reproduction. Therefore, the recently-updated INRMP for NAWSCL makes provision for administration of fertility control measures, including contraceptives, to feral horses captured during regular horse gathers as a means of reaching the AML for the feral horse population on NAWSCL.

- Keep the Centennial Horse Herd healthy and self-sustaining by maintaining and improving rangeland condition. This would be achieved by selectively and humanely gathering excess animals via the existing DoN and BLM removal process and adoption program. Remaining horses will be healthier and better able to survive stressful periods such as prolonged droughts and harsh winters when the rangeland resource is in a self-sustaining condition.

- Increase the health and adoptability of horses by taking only young animals when gathering excess, animals (for transfer to a BLM-run adoption program), by allowing the breeding herd to live out their lives on the range, and by carefully selecting the young animals to be retained. The younger animals are more marketable to the adopting public and the herd genetic quality will improve through thoughtful selection of breeding herd recruitment. The DoN is also considering placing some older, unadoptable horses in long-term holding facilities or sanctuaries.

- Continue to manage horses and burros based on population numbers and distributions and the results of habitat monitoring efforts.

The DoN and BLM currently cooperate in matters of joint responsibility such as conducting census, gathering and removing excess animals, and planning and budgeting the cooperative activities. Enhanced joint partnerships with BLM, Death Valley National Park (operated by the U.S. National Park Service), and the National Training Center (NTC) at Fort Irwin would be required to efficiently control burro numbers since feral burros are widespread in the area on and around the NAWSCL.

Consistent with 43 CFR § 4730, NAWSCL does not, except as an act of mercy, destroy any wild horse or burro without appropriate authorization. Sick or lame animals may be destroyed, when necessary, in the most humane manner possible.

NAWSCL continues to remove excess numbers of horses and burros from both the North and South Ranges. Animals continue to be gathered with the support of BLM and adopted through their wild horse and burro adoption program.

The Installation continues to attempt to reduce the burro population to zero animals through annual roundups and BLM's adoption program. Eliminating burros protects tortoise and other habitats on both the North and South Ranges, precludes additional burro impacts in towhee habitats, allows for more rapid forage recovery, and benefits the wild horse herd by removing competition for resources.

Roundup operations are managed by the EMD and are subject to an environmental review process and NEPA documentation requirements. Vehicle use during the roundups is confined to existing roads and established cleared sites. Run trap placement and horseback operations are located in surveyed areas that do not impact protected natural or cultural resources.

Animals removed are less than 3 years in age to facilitate rapid adoption through the BLM program. Removals of excess horses are necessary to improve the rangeland condition and keep the herd healthy, genetically viable, and self-sustaining. Maintaining the desired herd size also reduces impacts to natural resources (particularly in tortoise and towhee habitats) and allows for recovery of preferred forage items. Horses benefit from the increase in forage and decrease in competition and are better able to survive harsh winters and drought conditions. Therefore, the continued management practices have a positive effect on the respective horse herds as well as natural resources generally.

3.4.10 Fire Management

Military test and training events occasionally cause fires in various areas on both the North and South Ranges of NAWSCL. Fires resulting from test and training operations generally occur in remote range areas and are referred to as wild fires. Wild fires in these areas generally occur after periods of extensive precipitation causes the increased growth of weedy and herbaceous species around target impact areas. These weedy species create an added fuel load to the naturally occurring vegetation. Table 3.4-3 shows the number of recorded range fires and the number of acres burned from 1998 through 2012 on NAWSCL.

There have been 21 total fires caused by test and training operations over the 15-year period tracked in Table 3.4-3, with a number of these wild fires resulting in large fire footprints. These fires have generally occurred within the George, Coles Flat, and Coso South LMUs and in most instances were caused by either test article impacts or unpredictable aircraft crashes. South Range wild fires occurred primarily in Superior Valley and were much more frequent (209 fires in 15 years) but much smaller in terms of acreage affected. These wild fires averaged about 73 acres per year with a maximum recorded burn of 450 acres. NAWSCL is particularly concerned about fires occurring in the Superior Valley area because of the potential effects of wild fires on desert tortoises and designated critical habitat. The potential effects of wild fires could include direct mortality to individual desert tortoises and, in the longer term, type conversion of the plant community composition. This effect reduces the area's carrying capacity by allowing the establishment of non-native grasses that can out-compete the existing native vegetation needed for food by desert tortoise. An additional concern is that these invasive species grow rapidly during years of sufficient rainfall and produce large amounts of biomass. The added biomass provides a supplemental fuel source, allowing fires to spread more rapidly and burn with increased intensity. Wild fires on NAWSCL burned approximately 450 acres of tortoise critical habitat in 2011. Since 1998, a total

of 209 fires have consumed approximately 1,090 acres of tortoise critical habitat in the Superior Valley bombing range (as a practical matter, fires in the South Range as referenced in Table 3.4-3 were in critical habitat).

Table 3.4-3
Fire Occurrences on NAWSCL from 1998 to 2012

	South Range		North Range		TOTAL	
Year	Number of Fires	Acres Burned	Number of Fires	Acres Burned*	Number of Fires	Acres Burned*
1998	18	375	0	0	18	375
1999	1	7.6	0	0	1	7.6
2000	1	0.1	0	0	1	0.1
2001	0	0	0	0	0	0
2002	0	0	0	0	0	0
2003	0	0	0	0	0	0
2004	0	0	0	0	0	0
2005	111	70	4	30,060	115	30,130
2006	36	170	3	35,966	39	36,136
2007	31	18	0	0	31	18
2008	5	1	0	0	5	1
2009	0	0	0	0	0	0
2010	0	0	0	0	0	0
2011	6	450	7	465	13	915
2012	0	0	0	0	0	0
Unverified Year	0	0	7	40,018	7	40,018
TOTAL	209	1,091.7	21	106,509	230	107,600.7
Annual Average	13.9	72.8	1.4	7,100.6	15.3	7,173.4
Annual Maximum	111	450	7	40,018	115	40,018

* Fires resulting from military operations often occur in the same general areas and may result in the re-burn of those locations.

Source: U.S. Navy 2013a.

To date, there have been no confirmed desert tortoise mortalities directly associated with range fires. The confirmed loss of or harm to any desert tortoise due to a fire caused by military activities would be reported to USFWS in accordance with the 2013 BO (8-8-12-F-29).

Fire management capabilities at NAWSCL were developed by the Fire and Emergency Services Department commonly referred to as FedFire. FedFire prepared a NAWSCL Fire Management Plan (FMP) in 2007 and updates that Plan annually. The FMP did not have a formal fire management policy addressing natural resources protection. However, the FMP did include a wild fire management procedure that provides support for fires affecting natural resources, including tortoise habitat. The primary goal of the FMP is to suppress all fires occurring at NAWSCL while maintaining operational requirements and safety of personnel involved in fire management operations.

While the FMP did not have specific management objectives to conserve and protect natural resources, the NAWSCL INRMP did contain a fire management strategy. The fire management strategy included the following elements:

- Maintaining previously cleared target areas (cleared UXO and vegetation) in Superior Valley to reduce the potential for fuel buildup and thereby reduce the potential for fires to catch and spread into adjoining critical habitat areas. To the extent possible, move target objects from the periphery into the target area center;
- Continuing to maintain the existing mutual aid fire-fighting agreements with supporting agencies, and continuing to pursue the establishment of new mutual aid agreements;
- Reviewing standard procedures for initial response and fire suppression in Superior Valley test and training operations; and
- Using existing roads, cleared target areas, and washes as part of a fire break system.

The current fire management strategy has been revised during development of the EIS/LEIS as set forth in the February 2013 BO (8-8-12-F-29). These measures are intended to minimize and avoid fire effects to desert tortoise and associated habitat, and to maintain the safety of fire management personnel involved in the containment and suppression of wild fires. The fire management strategy for NAWSCL includes the following measures:

- Construct fire-fighting equipment access roads (which may provide some utility as a fire break), on an as-needed basis, in support of fire containment capabilities around targets. NAWSCL would use targets and the existing road network to determine where an access road may be prudent to prevent a fire from spreading into a roadless area. The utility of constructing access roads would be discussed with NAWSCL's Fire Department to determine where they would be useful to reduce the risk of fire and/or aid in fire suppression;
- Survey areas identified for access road/firebreak construction prior to ground-disturbing activities to ensure the proposed area is clear of desert tortoises and other protected resources;
- The DoN would evaluate the benefits of constructing and maintaining access roads relative to both the economic and environmental cost. Access roads would be approximately 12 feet (3.6 meters) in width. The DoN would, to the extent practicable, continue to access fire prone locations using areas naturally devoid of vegetation, including natural barriers such as washes and lava flows or existing roadways to minimize maintenance costs and impacts to native species;
- Continue to remove excessive vegetation (vegetation at a density that would sustain a fire) growth within the test and target areas. Vegetation would be removed as needed to minimize the potential for a large, catastrophic wild fire as a result of test and training operations. Environmental staff would monitor the annual vegetation growth and work in conjunction with the Range and Fire Departments to determine when and where vegetation management is warranted;
- Continue the control of invasive species to reduce degradation of plant and wildlife habitats and to reduce the supplemental fuel loading that could increase the frequency and extent of wild fires on NAWSCL;
- Continue to maintain existing mutual aid fire-fighting agreements with other agencies (e.g., BLM, U.S. Forest Service [USFS], and County of San Bernardino) and continue to pursue the establishment of new mutual aid agreements;

- Conduct post-fire biological surveys in accordance with the 2013 BO (8-8-12-F-29) when fires leave target or test impact areas and affect tortoise habitat or critical habitat. Surveys would be focused to determine if any tortoises were injured or killed. Surveys would document the date, time, location, cause, and acreage of the fire. Post-fire surveys would be limited to an annual cumulative acreage not to exceed 2,000 acres (1,000 acres in desert tortoise critical habitat and 1,000 acres outside of desert tortoise critical habitat). In the event of an unforeseen fire that exceeds this acreage, the DoN would consult with USFWS as soon as possible; and

- Continue to evaluate the effectiveness of the NAWSCL fire management strategy and refine applicable procedures in accordance with data driven lessons learned.

3.4.11 Target and Test Sites on NAWSCL

The INRMP update, as well as biological data from recent projects and studies on NAWSCL (including studies used in the preparation of the land disturbance analysis), will provide the current status of the potential occurrence of biological resources in these high-use areas. Existing biological data from the INRMP and the 2004 EIS (U.S. Navy 2004a) were supplemented by a literature search (e.g., CNDDB, Consortium of California Herbaria, and research studies and monitoring surveys conducted subsequent to the 2000 INRMP, etc.). These data formed the basis of an initial analysis of potential impacts associated with the Proposed Action and the project alternatives. Figures 3.4-9 and 3.4-10 depict the locations of target and test sites in relation to desert tortoise habitat.

Target and test areas typically consist of a cleared area, usually devoid of vegetation, that contains the actual target objects and accommodates most of the military activities. Buffer areas were established for these areas based on safety considerations and the actual land disturbance patterns around these impact areas. Primary buffer zones typically extend approximately 656 feet (200 meters) from the target boundary, but may vary with target type and use. Disturbance patterns resulting from military uses generally were found to be limited to areas within the buffers. The nature and extent of these disturbance patterns and habitat conditions vary among the target areas and depend on the duration and nature of use. The disturbance patterns described within the following sections apply to both natural and cultural resources, which may occur in these areas.

3.4.11.1 North Range

Airport Lake Land Management Unit

Vegetation types adjacent to the target areas include creosote bush scrub, saltbush scrub, and ecotonal areas (areas of intergradation) between these primary types. Creosote bush scrub tends to occur on the upper slopes of the basin, while saltbush scrub occurs adjacent to the northern edge of the Airport Lake playa and on the gentle lower slopes to the north. Desert holly is a component of the creosote bush scrub and saltbush scrub vegetation on the slopes of the White Hills adjacent to the southwestern edge of the playa. Areas along the northwest edge of Airport Lake are characterized by a disturbed climax habitat (vegetation resulting from disturbance that differs from naturally occurring vegetation in adjacent areas). These areas are dominated by devil's lettuce (*Amsinckia tessellata*).

The most biologically important effects of disturbance occur in areas where the soil profile has been substantially modified and where fire has removed the naturally occurring cover. Where the soil profile is disturbed, shrub cover is low and often consists of small, widely spaced individual shrubs. The understory in these areas generally is dominated by split grass (*Schismus* sp.) and native annuals. While these species also form the understory in adjacent undisturbed habitat, some differences in density and cover occur.

The disturbed climax habitat along the northwest edge of the playa appears to have resulted from a combination of fire and soil profile disturbance, the latter caused by blading (e.g., road maintenance and target repair/maintenance).

Federally protected and NAWSCL special status plant and wildlife species are not expected to occur within the cleared, unvegetated testing and training areas within the Airport Lake LMU. Airport Lake does not provide habitat for desert tortoise. However, several special status species have been documented within the boundaries of the Airport Lake LMU. The desert tortoise density north of Airport Lake Complex, at the south end of the Coso Basin within the Airport Lake LMU, has been estimated at between 5 to 20 tortoises per square mile (Kiva Biological Consulting and Epsilon Systems Solutions 2004). A variety of NAWSCL special status species are known from the Airport Lake LMU, such as fairy shrimp (*Branchinecta mackini* and *B. lindahli*). Burrowing owls (*Athene cunicularia*), raptors, and neotropical migrant bird species are also known from this LMU. There is moderate potential for seven NAWSCL special status plant species to occur on the Airport Lake Range buffer areas. Mojave fish-hook cactus (*Sclerocactus polyancistrus*), Charlotte's phacelia (*Phacelia nashiana*), Death Valley round-leaved phacelia (*Phacelia mustelina*), crowned muilla (*Muilla coronata*), desert bird's beak (*Cordylanthus eremicus* ssp. *eremicus*), Booth's evening primrose (*Camissonia boothii* ssp. *boothii*), and Clokey's cryptantha (*Cryptantha clokeyi*) could occur in the White Hills and areas near the High Altitude Bombing Range (HABR) Gunbutt and Sam's Town targets. Based on known habitat requirements, there is a low potential for other NAWSCL special status plant species to occur on the surveyed portions of this range. Darwin Tiemann's beetle could be present in this area because its host plant, Parry saltbush (*Atriplex parryi*), occurs near the targets. In addition, invertebrates associated with sand (such as Jerusalem crickets [*Stenopelmatus fuscus*] and dune weevils) could occur in the sandy areas near the pre-mission training area.

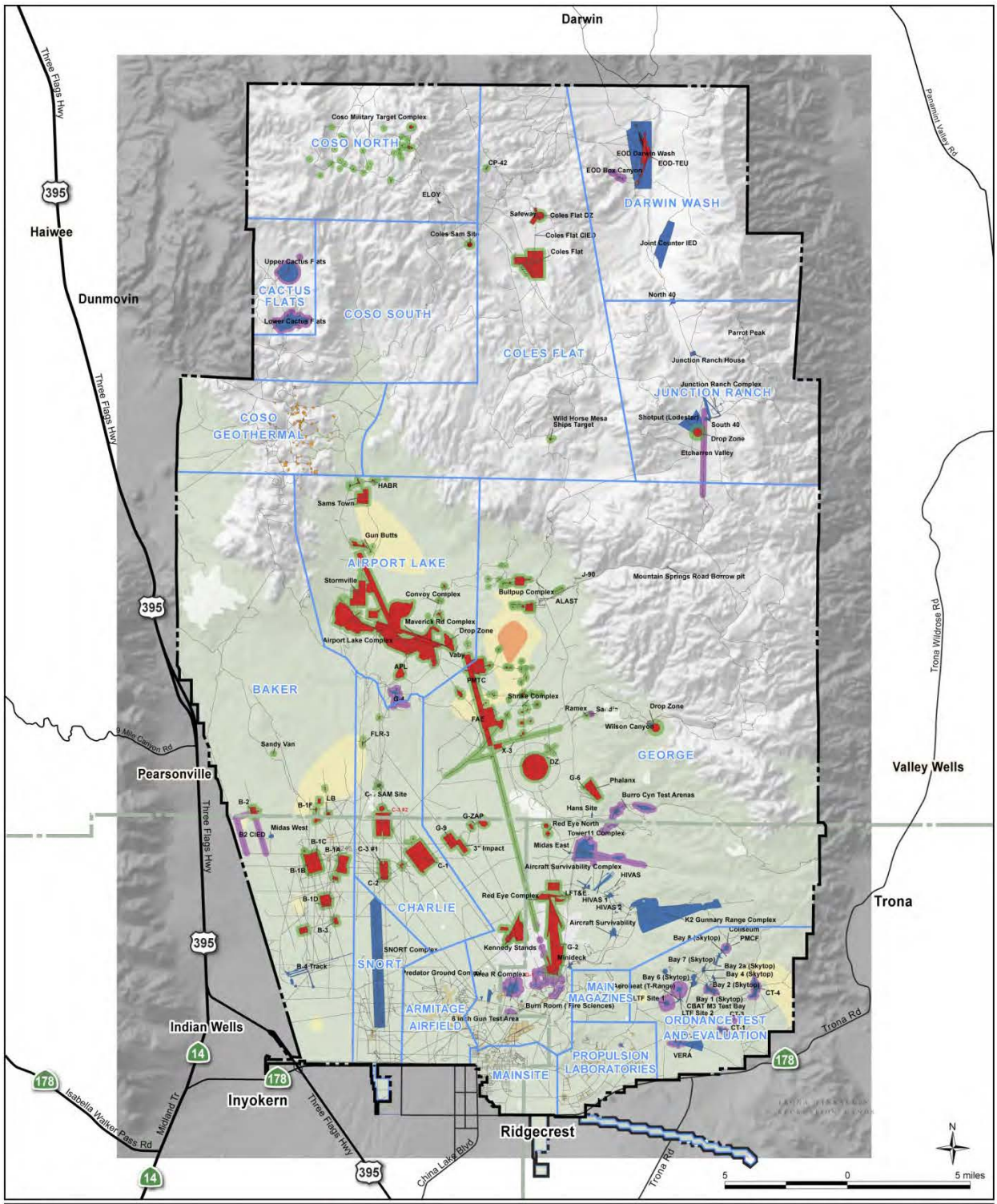
Armitage Airfield Land Management Unit

Vegetation types within the buffer areas include creosote bush scrub, saltbush scrub, Mojave sand field and alkaline basin scrub. Creosote bush scrub tends to occur to the south on the upper slopes of the basin, while saltbush scrub and Alkaline Basin scrub occur adjacent to the western edge of the China Lake playa in the northern portion of the LMU. A small area of Mojave sand field extends into the northwest corner of this LMU.

Federally listed and NAWSCL special status plant and wildlife species are not expected to occur within the cleared, unvegetated testing and training areas within the Armitage Airfield LMU. However, desert tortoise monitoring on NAWSCL has categorized the majority of the management unit as potential tortoise habitat (0 to 5 tortoises per square mile) (Kiva Biological Consulting and Epsilon Systems Solutions 2004). The native desert scrub vegetation is also suitable for a variety of federally protected and NAWSCL special status wildlife, including burrowing owl, Mohave ground squirrel, and LeConte's thrasher. Habitat for one special status plant species may occur within the boundaries of the Armitage Airfield LMU. Shining milk-vetch (*Astragalus lentiginosus* var. *micans*) has not been verified on NAWSCL though its sand dune habitat is prominent on the perimeter of China Lake playa.

Baker Range Land Management Unit

While low-intensity disturbance characterizes most of the buffer areas, there are numerous paved and unpaved roads, and large, cleared target areas, within the Baker Range LMU. The roads also provide disturbed edges that may facilitate the movement of invasive exotic plant species. Windblown sand has accumulated along the eastern and southern edges of several of the targets, resulting in areas of high to moderate disturbance. Stands of invasive exotic plant species, including tumbleweed (*Salsola tragus*) and filaree (*Erodium cicutarium*), are well established on the sand accumulation areas at two of the targets.



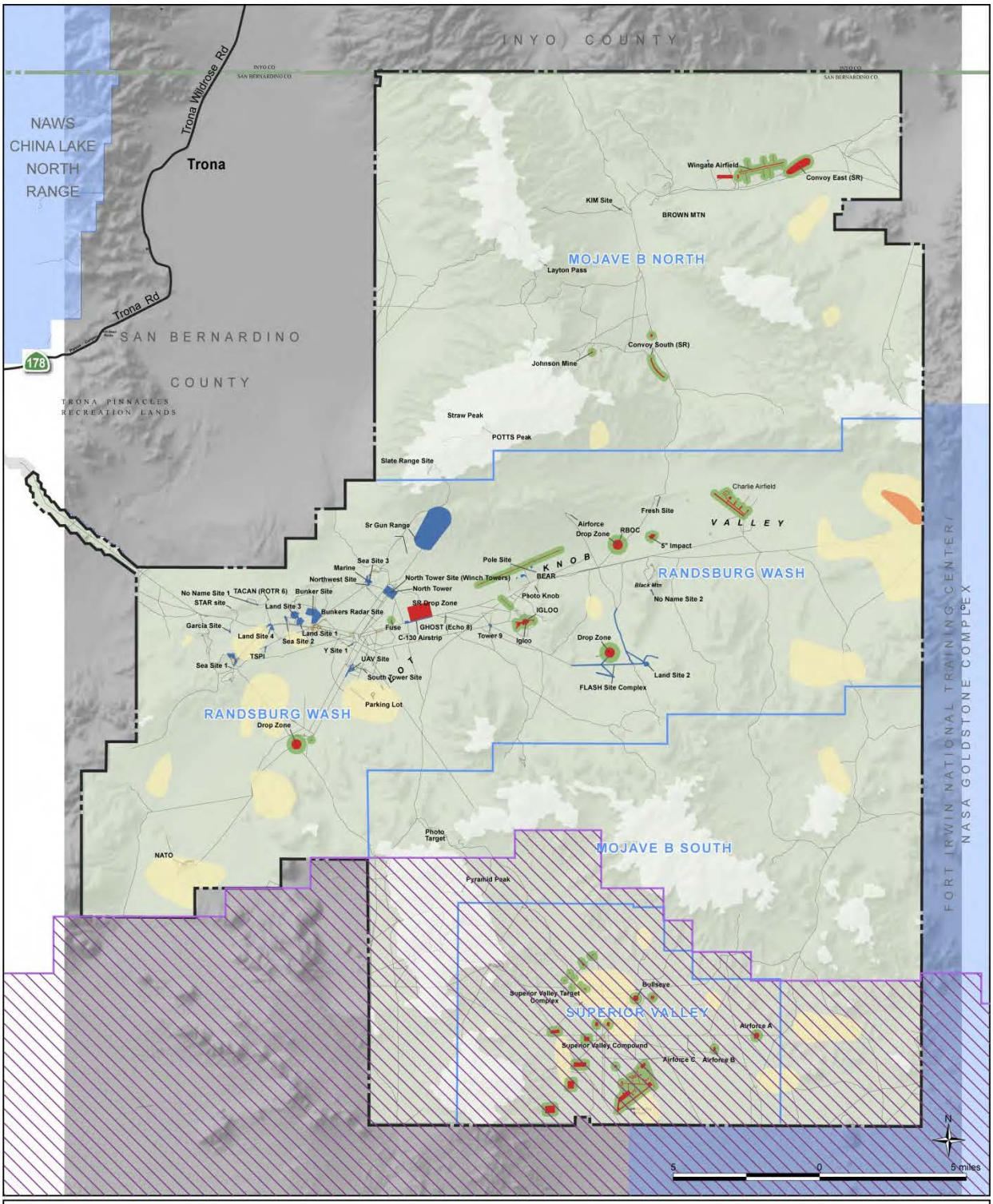
LEGEND

- Tortoise Habitat
- 5 - 20 Tortoises per Square Mile
- 20 - 50 Tortoises per Square Mile
- Land Management Unit
- Installation Boundary
- Target
- Target Buffer
- Test Site
- Test Area Buffer
- County Boundary

CHINALAKEEIS/081

Estimated Desert Tortoise Habitat Areas with Target and Test Sites, North Range

Figure 3.4-9



CHINALAKEEIS/082

Estimated Desert Tortoise Habitat Areas with Target and Test Sites, South Range

Figure 3.4-10

Additional areas of high to moderate disturbance, characterized by cratering and munitions scatter, scraping, blading, road construction, and debris accumulation, occur at these sites. No federally listed threatened or endangered species or NAWSCL special status plant or wildlife species would be expected in the cleared and heavily disturbed areas within this LMU. However, desert tortoise densities have been estimated at between 5 to 20 tortoises per square mile in suitable habitat on the eastern portion of the Baker Range LMU, approximately 5 miles south of the White Hills, on the western side of the Indian Wells Valley (Kiva Biological Consulting and Epsilon Systems Solutions 2004). Additionally, other federally protected and NAWSCL special status wildlife species are known from the Baker Range LMU, including burrowing owl, LeConte's thrasher, raptors, neotropical migrant bird species, and the state listed threatened Mohave ground squirrel. Two NAWSCL special status plant species were detected within this LMU, outside of the test site and buffers. Booth's camissonia (*Camissonia boothii* ssp. *boothii*) and Charlotte's phacelia occur in the Volcano Peak and Cinder Peak area of the Coso Mountains. There is a low potential for shining milk-vetch to occur on areas of sand accumulation and adjacent undisturbed habitat characterized by deep sandy soils. Clokey's cryptantha also could occur in wash habitats within the buffer areas. While these species could be present, none were observed in the habitat where they most likely would occur. Portions of Baker Range provide low-density desert tortoise habitat, although the extreme southwest corner is classified as medium density for desert tortoise (see Figure 3.4-4). Areas of sand accumulation and adjacent undisturbed habitat characterized by deep sandy soils may be inhabited by invertebrates typically associated with sand, including Jerusalem crickets and dune weevils.

Cactus Flat Range Land Management Unit

Vegetation types within the buffer areas include Joshua tree woodland, Mohave mixed woody scrub, sagebrush scrub, shadscale scrub and vernal playa. The Cactus Flat target includes a cleared area. Although no federally listed threatened or endangered species are associated with the Cactus Flats LMU, other federally protected and NAWSCL special status wildlife species associated with the LMU include Argus Mountains kangaroo rat (*Dipodomys panamintinus argusensis*), Mohave ground squirrel, neotropical migrant birds, and LeConte's thrasher. Many of the NAWSCL special status plants potentially present in this LMU are known from the adjacent Coso LMU and the Coso Range. These include Booth's camissonia, Inyo hulsea (*Hulsea vestita* ssp. *inyoensis*), Charlotte's phacelia and Mojave fish-hook cactus (*Sclerocactus polyancistrus*).

Charlie Range Land Management Unit

Small vernal playas occur on and adjacent to the C3TC2 targets located in the western-central portion of Charlie Range. In addition, one vernal playa large enough to appear on U.S. Geological Survey topography maps occurs within the 2,500-foot (762-meter) buffer area. Fairy, brine, and/or tadpole shrimp may be present in these vernal playas.

Other than desert tortoise, no other federally listed threatened or endangered species were detected on the Charlie Range LMU. Relatively small areas within the LMU have estimated tortoise densities between 5 to 20 tortoises per square mile, while the remaining desert scrub vegetation has been categorized as potential tortoise habitat (Kiva Biological Consulting and Epsilon Systems Solutions 2004). Other federally protected or NAWSCL special status wildlife species associated with the Charlie Range LMU include burrowing owl, LeConte's thrasher, raptors, and neotropical migrant bird species. No NAWSCL special status plants species were detected on this LMU. Some small areas of sand accumulation were observed in the southern part of this LMU.

Coles Flat Land Management Unit

Vegetation types within the buffer areas are complex and highly dissected. These vegetation types include pinyon woodland, sagebrush scrub, blackbrush scrub, shadscale scrub, Mojave mixed woody scrub, saltbush scrub and Mojave wash scrub. The Coles Flat target area is characterized by sagebrush scrub with a sparse overstory of Joshua trees. The Ship target on Wild Horse Mesa is adjacent to a fire-related disturbed climax habitat primarily to the north, as well as south of this target. Sagebrush scrub, Mojave wash scrub, and blackbrush scrub occur within the buffer area north of the target. Federally protected and NAWSCL special status wildlife species associated with the LMU include Argus Mountains kangaroo rat (*Dipodomys panamintinus argusensis*), neotropical migrant birds, and LeConte's thrasher. Many of the NAWSCL special status plants are known from this LMU and the adjacent Coso LMU. These include Great Basin onion (*Allium atrorubens* var. *atrorubens*), Pinyon rock cress (Boechera dipar [*A. dispar*]), Dedecker's clover (*Trifolium macilentum* var. *dedeckerae*) and Inyo hulsea. Habitat for desert bird's beak (*Cordylanthus eremicus ssp. eremicus*) occurs throughout the northern portion of this LMU. Darwin Mesa milkvetch (*Astragalus atratus* var. *mensanus*) occurs nearby in the Coso LMU. Caespitose evening primrose is a plant species with unconfirmed records. Coso Mountains lupine and Mojave fish-hook cactus are both documented in the northern part of this LMU.

Coso Geothermal Land Management Unit

Vegetation types within the buffer areas include creosote bush scrub, hopsage scrub, saltbush scrub, Mojave mixed woody scrub and alkaline basin scrub. Creosote bush scrub occurs in the east and west portions on the upper slopes of the basin, while saltbush scrub occurs in the center and northern portion of the LMU. Hopsage scrub occurs in the southern central portion and alkaline basin scrub occurs in small inclusions in the eastern portion of the LMU.

Federally listed and NAWSCL special status plant and wildlife species are not expected to occur within the cleared, unvegetated areas within the Coso Geothermal LMU. However, desert tortoises occur in low densities in suitable habitat on the eastern flank of this LMU. Other federally protected or NAWSCL special status wildlife species known from this LMU include species such as burrowing owl, Mohave ground squirrel, and pallid bat. Many of the NAWSCL special status plants potentially present in this LMU are known from the adjacent Coso LMU and the Coso Range. These include Booth's camissonia, Darwin Mesa milk-vetch and crowned muilla.

Coso Land Management Unit

The CLUMP and INRMP define the Coso LMU as consisting of several areas, including the Coso Training Range. Vegetation types within the buffer areas include pinyon woodland, sagebrush scrub, blackbrush scrub, Mojave wash scrub, and disturbed climax habitat. In the Coso Targets Range area, pinyon woodland and sagebrush scrub form an intricate mosaic, with habitat dominated by single-leaf pinyon pine (*Pinus monophylla*) occurring on steep slopes and basalt outcrops. Sagebrush scrub occurs on intervening flats and narrow valleys.

Only a small portion of the Coso Range LMU has been categorized as potential desert tortoise habitat, including an area along the eastern edges of the Coso Geothermal Lease Area (Kiva Biological Consulting and Epsilon Systems Solutions 2004). Federally protected and NAWSCL special status wildlife species known from the LMU include several raptors (Cooper's hawk [*Accipiter cooperii*], sharp-shinned hawk [*Accipiter striatus*], golden eagle, and prairie falcon [*Falco mexicanus*]), Mohave ground squirrel, neotropical migrant birds, and LeConte's thrasher. Other NAWSCL special status wildlife species are found in this area (for example, roosting and hibernating bats, and burrowing owl). In particular, Townsend's big-eared bat (*Corynorhinus* [*Plecotus*] *townsendii*), a species known to be in decline and

very sensitive to disturbance, is known from caves and mines in the Argus and Coso mountains. However, no NAWSCL special status wildlife species are expected to be closely associated with the target areas.

Three NAWSCL special status plant species were detected at the Coso Training Range sites: Darwin Mesa milk-vetch, pinyon rock cress (*Boechera dispar*), desert bird's-beak, and a plant tentatively identified as Panamint mariposa lily (*Calochortus panamintensis*). With the exception of pinyon rock cress, these species were observed in substantial numbers in the surveyed area. One NAWSCL special status plant species, Mojave fish-hook cactus, occurs at the Coles Flat site. No NAWSCL special status species were detected at the Ship target. Potential habitat exists for naked milkvetch (*Astragalus serenoi* var. *shockleyi*), but only unconfirmed records exist for this LMU.

Several other NAWSCL special status plant species are known to occur at similar elevations and habitats and could occur in the Coso LMU, and potentially the Coso Training Range. These include Inyo hulsea, DeDecker's clover (*Trifolium macilentum* var. *dedeckerae*), Great Basin onion (*Allium atrorubens* var. *atrorubens*), Mono County phacelia (*Phacelia monoensis*), Pinyon Mesa buckwheat (*Eriogonum mensicola*), desert bird's-beak, Panamint Mountains buckwheat (*Eriogonum microthecum* var. *panamintense*), Coso Mountains magnificent lupine (*Lupinus magnificus* var. *glarecola*), Charlotte's phacelia, naked milk-vetch, Booth's evening primrose, Darwin rock cress (*Arabis pulchra* var. *munciensis*), and Yerba desierto (*Fendlerella utahensis*).

Darwin Wash Land Management Unit

Vegetation communities associated with the Darwin Wash LMU include pinyon woodland, creosote bush scrub, sagebrush scrub, blackbrush scrub, shadscale scrub, and Mojave wash scrub. Although no federally listed threatened or endangered species are associated with the Darwin Wash LMU, this area supports NAWSCL special status species such as the Mohave ground squirrel and Argus Mountains kangaroo rat.

Federally listed and NAWSCL special status plants are not expected to occur within the cleared, unvegetated testing and training areas within the Darwin Wash LMU. NAWSCL special status plants known from this area include Yerba desierto, Mojave fish-hook cactus, and pinyon rock cress.

George Range Land Management Unit

George Range supports some of the highest density of desert tortoise areas on NAWSCL, with densities estimated between 20 to 50 tortoises per square mile in the area approximately 3 miles east of Airport Lake, on the west edge of the LMU (Kiva Biological Consulting 2004 and Epsilon Systems Solutions 2004). The Inyo California towhee occurs on the east edge of the George Range LMU, from Indian Joe Canyon to Mountain Springs Canyon. Critical habitat for the towhee was designated for a portion of Mountain Springs Canyon, as well as smaller areas on the George Range LMU. A variety of wildlife categorized as NAWSCL special status species (i.e., special status species not protected by the federal ESA) were detected within this LMU, but would not be expected to occur within the cleared and routinely disturbed areas associated with the test and training sites. These federally protected or NAWSCL special status wildlife species include neotropical migrant birds, long-eared owl (*Asio otus*), golden eagle, Cooper's hawk, LeConte's thrasher, Mohave ground squirrel, and Townsend's big-eared bat. There are six NAWSCL special status plant species documented outside of the test and training sites, but within this LMU: Darwin Mesa milk-vetch, Clokey's cryptantha, Amargosa beardtongue (*Penstemon fruticiformis* ssp. *amargosae*), Booth's evening primrose, desert bird's beak, and magnificent lupine. There is potential for pygmy poppy (*Canbya candida*), crowned muilla, Darwin rock cress, pinyon rock cress, and Mojave fish-hook cactus to occur within buffer areas on George Range, since they are known to occur within similar

habitats at similar elevations. Portions of George Range provide low-density desert tortoise habitat. Areas of sand accumulation and adjacent undisturbed habitat characterized by deep sandy soils may also be inhabited by invertebrates typically associated with sand, including Jerusalem crickets and dune weevils. Dune systems in the eastern portion of George Range also support concentrations of clonal creosote rings, a unique plant assemblage.

Junction Ranch Land Management Unit

Pinyon woodland, blackbrush scrub, sagebrush scrub, Mojave mixed woody scrub, sagebrush scrub, Mojave wash scrub, and Joshua tree woodland occurs on the Junction Ranch LMU. The federally listed threatened and state listed endangered Inyo California towhee occupies riparian habitat in the southern Argus Mountains on the southeast corner of the Junction Ranch LMU, in the vicinity of Water Canyon (LaBerteaux and Garlinger 1998). Federally protected and NAWSCL special status species documented on the LMU include Argus Mountains kangaroo rat, neotropical migrant birds, and LeConte's thrasher. NAWSCL special status plant species known from the LMU include Booth's camissonia, desert bird's beak, Inyo hulsea, Mojave fish-hook cactus and Panamint Mountain buckwheat.

Main Magazine Land Management Unit

Vegetation types within the buffer areas include creosote bush scrub, saltbush scrub, and Mojave sand field. Creosote bush scrub occurs from the south boundary extending throughout on the upper slopes of the basin, while saltbush scrub occurs in the northwest and southeast portions of the LMU. Mojave sand field occurs mostly in the northeast corner of the LMU.

Federally listed and NAWSCL special status plant and wildlife species are not expected to occur within the cleared, unvegetated magazine and operational areas within the Main Magazine LMU. However, desert tortoise monitoring on NAWSCL has categorized the majority of the LMU as potential tortoise habitat (0 to 5 tortoises per square mile) (Kiva Biological Consulting and Epsilon Systems Solutions 2004). The native desert scrub vegetation is also suitable for a variety of other federally protected or NAWSCL special status wildlife, including burrowing owl, Mohave ground squirrel, and LeConte's thrasher. Habitat for one special status plant species may occur within the boundaries of the Main Magazine LMU. Shining milk-vetch has not been verified on NAWSCL though its sand dune habitat is prominent on the perimeter of the China Lake playa.

Mainsite Land Management Unit

Vegetation types within the buffer areas include creosote bush scrub, saltbush scrub, vernal playa and Mojave mixed woody scrub. Creosote bush scrub tends to occur to the west and east areas on the upper slopes of the basin, while saltbush scrub occurs in the south central part of the LMU. Small areas of vernal playa occur in the center of this LMU.

Federally listed and NAWSCL special status plant and wildlife species are not expected to occur within the cleared, unvegetated areas within the Mainsite LMU. However, desert tortoise monitoring on NAWSCL has categorized the portions of the LMU as potential tortoise habitat (0 to 5 tortoises per square mile) (Kiva Biological Consulting and Epsilon Systems Solutions 2004). The spotted bat, a NAWSCL special status wildlife species, has been recorded at the Mainsite LMU. The native desert scrub vegetation is also suitable for a variety of other federally protected or NAWSCL special status wildlife, including burrowing owl, Mohave ground squirrel, and LeConte's thrasher. Habitat for one special status plant species may occur within the boundaries of the Mainsite LMU. Shining milk-vetch has not been verified on NAWSCL though its potential habitat includes part of this LMU.

Ordnance Test and Evaluation Land Management Unit

Vegetation types within the buffer areas include creosote bush scrub, saltbush scrub, Mojave sand field, Mojave mixed woody scrub and alkaline basin scrub. Creosote bush scrub occurs throughout the majority of the basin, while saltbush scrub occurs mostly in the southern portion of the LMU. Mojave mixed woody scrub occurs in a small portion of the northeast corner and a small area of Mojave sand field extends into the northwest corner of this LMU.

Federally listed and NAWSCL special status plant and wildlife species are not expected to occur within the cleared, unvegetated test sites and operational areas within the Ordnance Test and Evaluation LMU. However, desert tortoise monitoring on NAWSCL has categorized the majority of the LMU as potential tortoise habitat (0 to 5 tortoises per square mile), and estimates tortoise densities ranging from 5 to 20 tortoises per square mile on a small portion of habitat on the western end of the LMU, on a larger patch on the northwest corner of the LMU, and in the southeast corner of the LMU (Kiva Biological Consulting and Epsilon Systems Solutions 2004). The native desert scrub vegetation is also suitable for a variety of federally protected and NAWSCL special status wildlife, including burrowing owl, Mohave ground squirrel, LeConte's thrasher, prairie falcon and other species. Habitat for one special status plant species may occur within the boundaries of the Ordnance Test and Evaluation LMU. Shining milk-vetch has not been verified on NAWSCL though its sand dune habitat is prominent on the perimeter of the China Lake playa.

Propulsion Laboratories

Vegetation types within the buffer areas include creosote bush scrub, saltbush scrub and Mojave mixed woody scrub. Creosote bush scrub tends to occur to the south on the upper slopes of the basin, while saltbush scrub occurs in the northeast corner of the LMU. Mojave mixed woody scrub occurs in a small portion of the northwest corner of this LMU.

Federally listed and NAWSCL special status plant and wildlife species are not expected to occur within the cleared, unvegetated areas within the Propulsion Laboratories LMU. However, desert tortoise monitoring on NAWSCL has categorized the majority of the LMU as potential tortoise habitat (0 to 5 tortoises per square mile) (Kiva Biological Consulting and Epsilon Systems Solutions 2004). Mohave ground squirrel has been recorded on the LMU. The native desert scrub vegetation is also suitable for a variety of federally protected and NAWSCL special status wildlife, including burrowing owl and LeConte's thrasher. Habitat for one special status plant species may occur within the boundaries of the Propulsion Laboratories LMU. Shining milk-vetch has not been verified on NAWSCL though its potential habitat includes part of this LMU.

SNORT Land Management Unit

Vegetation types within the buffer areas include creosote bush scrub, saltbush scrub, and Mojave sand field. Creosote bush scrub occurs over a majority of the LMU, while saltbush scrub occurs adjacent to the western edge of the China Lake playa. A large area of Mojave sand field extends in the northern third of this LMU.

Federally listed and NAWSCL special status plant and wildlife species are not expected to occur within the cleared, unvegetated areas within the SNORT LMU. However, desert tortoise monitoring on NAWSCL has categorized the majority of the management unit as potential tortoise habitat (0 to 5 tortoises per square mile) (Kiva Biological Consulting 2004). The native desert scrub vegetation is also suitable for a variety of other federally protected and NAWSCL special status wildlife, including Mohave ground squirrel, burrowing owl, and LeConte's thrasher. Habitat for one special status plant species may occur

within the boundaries of the SNORT LMU. Shining milk-vetch has not been verified on NAWSCL though its sand dune habitat is prominent on the perimeter of the China Lake playa.

3.4.11.2 South Range

Mojave B North and South Land Management Units

The majority of the Mojave B North and South LMUs have been categorized as potential desert tortoise habitat, except for the mountainous terrain associated with the Slate Range, Straw Peak, and Brown Mountain on Mojave B North, and Granite Mountain, Pilot Knob, Eagle Crags, and Black Mountain on Mojave B South. Pockets of habitat have been estimated to have 5 to 20 tortoises per square mile within these LMUs, east of Straw Peak and west of the Owls Head Mountains on Mojave B North, and approximately 5 miles east of Eagle Crags on Mojave B South (Kiva Biological Consulting and Epsilon Systems Solutions 2004). Other federally protected and NAWSCL special status wildlife species known from these LMUs include Nelson's bighorn sheep on Eagle Crags, golden eagle territories associated with the various mountainous terrain, and burrowing owl and Mohave ground squirrel on both Mojave B North and South. Two NAWSCL special status plant species were detected at sites within these LMUs; Panamint dudleya (*Dudleya saxosa* ssp. *saxosa*) and Mojave indigo bush (*Psorothamnus arborescens* var. *arborescens*). Mojave fish-hook cactus occurs scattered throughout the Mojave B LMUs. Additionally, there is potential for Clokey's cryptantha, crowned muilla, and Death Valley round-leaved phacelia to occur within buffer areas on the Wingate Airfield target area because these species are known from similar habitats at similar elevations. Desert tortoise scat was detected adjacent to one of the taxiways. The habitat adjacent to the target area is characterized as low-density desert tortoise habitat.

Randsburg Wash Land Management Unit

Vegetation types adjacent to the target areas include creosote bush scrub, saltbush scrub, and Mojave sand field. Practically all of the natural areas within the Randsburg Wash LMU have been categorized as potential desert tortoise habitat. The highest estimated tortoise densities (20 to 50 tortoises per square mile) within the South Range are located at the eastern end of the Randsburg Wash LMU, midway between the Quail Mountains and the Granite Mountains, along the eastern border of NAWSCL (Kiva Biological Consulting and Epsilon Systems Solutions 2004). Areas estimated to support tortoises at densities of 5 to 20 tortoises per square mile are located in the southwestern end of the Pilot Knob Valley on NAWSCL. Other federally protected and NAWSCL special status wildlife known from the Randsburg Wash LMU include Mohave ground squirrel, burrowing owl, and spotted bat. Six NAWSCL special status plant species have been documented within the Randsburg Wash LMU: Mojave indigo bush, Death Valley round-leaved phacelia, desert cymopterus (*Cymopterus deserticola*), Clokey's cryptantha, appressed muhly (*Muhlenbergia appressa*), and Mojave fish-hook cactus, which is widely distributed across the LMU. There is potential for crowned muilla to occur within buffer areas on the Charlie Airfield target area because this species is known from similar habitats at similar elevations. The habitat adjacent to the target is characterized as low-density desert tortoise habitat.

Superior Valley Land Management Unit

Vegetation adjacent to the targets is predominantly creosote bush scrub and saltbush scrub. Creosote bush scrub is the predominant vegetation on and adjacent to the Bullseye target. Saltbush scrub and Mojave wash scrub occur in a large drainage adjacent to the auxiliary Bullseye target. The remaining portions of the surveyed area are characterized by saltbush scrub. With the exception of the mountainous terrain associated with Slocum Mountain and the eastern slopes of Granite Mountain, the Superior Valley LMU has been categorized as either potential desert tortoise habitat or is estimated as supporting tortoise densities of 5 to 20 tortoises per square mile (Kiva Biological Consulting and Epsilon Systems Solutions

2004). The southwestern portion of the Southeast Airfield Complex target is in moderate-density desert tortoise habitat, while the other target areas are located in low-density desert tortoise habitat. The entire LMU contains approximately 70,000 acres (28,330 hectares) of tortoise critical habitat. Several NAWSCL special status species have been documented within the LMU, including Mohave ground squirrel, LeConte's thrasher, and Mojave fish-hook cactus. There is potential for Lane Mountain milk-vetch (a federally listed species), Clokey's cryptantha, and crowned muilla to occur within buffer areas on the Superior Valley LMU targets because these species are known from similar habitats at similar elevations.

3.5 CULTURAL AND PALEONTOLOGICAL RESOURCES

Cultural resources consist of sites, buildings, structures, objects, and districts. These may be historic or prehistoric in age, or a combination of both. Historic properties are cultural resources eligible for listing to the National Register of Historic Places (National Register). Evaluation criteria for the National Register are provided in 36 CFR 60 and include age, integrity, and significance. Paleontological resources are fossilized plant or animal remains that have been preserved in the geological record and possess scientific and educational value. Evaluation criteria for paleontological resources have been established by professional organizations and agencies, including the Society of Vertebrate Paleontology (SVP 1995, 1996) as discussed in the ICRMP, and the BLM (BLM 2008). Current knowledge of the prehistory and history of the area encompassed by NAWSCL and its relationship to cultural developments throughout Southern California is considered in detail elsewhere (e.g., Sutton et al. 2007; U.S. Navy 2012b). Current research indicates that humans have occupied the northern Mojave Desert for at least 10,000 years, and possibly longer (Basgall 2000; Davis and Panlaqui 1978; Sutton et al. 2007). This prehistoric and historic use of the area has left a rich and diverse array of prehistoric and historic cultural resources. Based on the Installation's archaeological site and built environment databases, as of November 2011, nearly 6,100 cultural resources have been recorded at NAWSCL, and the identification and recordation of additional cultural resources is ongoing.

3.5.1 Region of Influence

The ROI for cultural resources includes areas within the NAWSCL boundaries.

3.5.2 Resource Types

3.5.2.1 Prehistoric Archaeological Resources

The cultural resources at NAWSCL are predominantly prehistoric. While the identification and recordation of sites is ongoing, as of January 2012, nearly 3,591 prehistoric archaeological sites have been recorded. The earliest of the archaeological sites identified at NAWSCL appear to be spatially associated with the pluvial China Lake, suggesting an early lacustrine adaptation. Based on artifact assemblages that include fluted points (Davis 1974, 1978; Dillon 2002), a number of early archaeological components are found along China Lake's shorelines and drainage basin (Rosenthal et al. 2001).

The wide range of prehistoric site types that are found on NAWSCL include quarries, lithic scatters, ceramic scatters, trails, habitation sites, bedrock millings, rock features, and rock art. The obsidian quarries of the Coso Volcanic Field are the best known sources of raw material within the region that were used prehistorically for making tools. It was a prehistoric economic resource that was traded throughout Southern and Central California. In addition to the obsidian quarries, there are metavolcanic, basalt, chert, and chalcedony quarries, which supplied prehistoric peoples with the raw materials needed to make tools (Deis and Cleland 2004). The majority of known chert and chalcedony quarries are located in the South Range.

Habitation sites in the area consist of temporary camps with a resource-specific focus such as for hunting or pinyon nut gathering and processing (marked by bedrock milling features), and longer term habitation areas. Human remains, although rare, have been found, and sites containing these are considered to be particularly sensitive. Both cremations and burials have been found at NAWSCL. Among the habitation sites on NAWSCL are numerous rock shelters, which are found in the mountainous areas of both the North and South Ranges. These rock shelters provide a high degree of preservation of organic materials that normally do not survive in open air sites. Such organic materials may include basketry, cordage, fibers, and hides. Rock features are a common site attribute in sites. Rock features recorded on the

Installation include hunting blinds; cairns; and rock rings, which may be indicative of habitation. Rock art is abundant in both the North and South Ranges, but is particularly concentrated on the walls of the canyons that make up the Coso Rock Art District, which is discussed further in Section 3.5.5.2.

To date, five archaeological districts have been listed or recommended eligible for the National Register—Coso Rock Art District, Coso Hot Springs, Pothunter Spring Archaeological District, Sugarloaf Archaeological District, and Cactus Flat—of which the Coso Rock Art District is also a National Historic Landmark (NHL) (U.S. Navy 2004a, U.S. Navy 2012b). Also found on NAWSCL are areas of Native American traditional significance, including one Traditional Cultural Property (TCP) (Coso Hot Springs). TCPs are defined as places of special heritage value to contemporary communities (Parker and King 1990).

3.5.2.2 Historical Archaeological Resources

Historical archaeological resources at NAWSCL are generally associated with one or more of five broad categories: military, mining, homesteading/ranching, water development, and/or transportation. The first military presence in the area was the early expeditions in the 1840s and 1850s, including Fremont's U.S. Army Corps of Topographical Engineers expedition through the Owens Valley. These early expeditions left few traces. The military again entered the area in 1862 during hostilities between Euroamerican settlers and miners and local Native American groups. The conflict was resolved by 1867, and a military presence was no longer needed (Brooks et al. 1979). Remnants of buildings and structures in the Coso Village area on the North Range were long believed to be associated with this early military presence, however, in 2008, they were identified as part of a historic mill (ASM 2008; U.S. Navy 2012b).

Although mining of precious metals and minerals occurred on what is now NAWSCL as early as circa 1860, the majority of the mining activities took place much later, between 1930 and 1943. Site types associated with mining are mines, prospects, adits, and associated structures; mining equipment; trash scatters; and ovens used to produce charcoal for processing ore. One of the larger mining interests in the vicinity of what is now NAWSCL was the American Magnesium Company's Epsom salt mine, which operated in the 1920s in what is now the Wingate Pass area. Associated with the mine, and partially within the South Range, is a monorail built to transport ore to nearby Trona (JRP 2000).

Homesteading and ranching occurred in areas where water was abundant as early as the 1870s, and continued until the DoN took over the property in 1943. The ranches supplied the mines with meat (Coombs and Greenwood 1982; Warren 1981). Most of the buildings were removed by the DoN in the 1940s, but structural remains and refuse scatters are evidence of past homesteading and ranching activities. Water development (i.e., springs and wells) was often associated with homesteading and ranching. Archaeological remnants of these sites include pumping equipment and structures.

The earliest transportation routes in the area were for exploration and most likely followed existing Native American trails. One such documented route was followed by Joseph Walker in 1832 on his way between Salt Lake and Monterey through Walker's Pass, located about 10 miles (16 kilometers) west north-west of present-day Ridgecrest (Coombs and Greenwood 1982). The majority of historic roads within NAWSCL connected the mines with major transportation routes and railheads. Among these is the 20-Mule-Team Road, used to haul borax from Death Valley deposits to railroads at Daggett and Mojave. Approximately 40 miles (64 kilometers) of the 20-Mule-Team Road crosses through the NAWSCL South Range. These roads have been largely improved with modern technology, particularly through the China Lake Basin, although relatively intact sections of early roads still exist.

3.5.2.3 Historic Navy-Built Resources

In anticipation of World War II (WWII), the DoN engaged in rocket research, development, testing, and evaluation as early as 1940. Concurrently, the California Institute of Technology was conducting extensive research in rocket development, receiving a contract from the government in 1941. The California Institute of Technology initially conducted research and testing at university laboratories in Eaton Canyon near Pasadena. The proximity of these highly explosive operations to the city of Pasadena were concerns for public safety, and a search for a more isolated site began. In 1943, the Naval Ordnance Test Station was established near the remote Inyokern airfield in Kern County as a permanent facility to research, develop, test, and evaluate weapons. The construction of specialized buildings for rocket development was authorized, along with amenities needed for personnel such as housing, recreational facilities, and administrative buildings (JRP 1996).

The Stafford, Davies, and Gogerty firm was responsible for the Naval Ordnance Test Station Inyokern master site planning and architecture. Primary operational rocket research and testing occurred at Mainsite, China Lake Pilot Plant, and Salt Wells Pilot Plant. The China Lake Pilot Plant was a propellant and rocket motor factory and experimental production facility. The Bureau of Ordnance considered propellant dangerous and designed a wide buffer for the China Lake Pilot Plant between the testing sites and the housing complexes. The plant buildings at the China Lake Pilot Plant, mostly constructed in 1944, were engineered with guidance from California Institute of Technology scientists and were made of reinforced concrete and steel plates. China Lake Pilot Plant included six groups of buildings scattered over 2,000 acres. Two buildings in particular played an important role for the DoN in WWII: Building 1 and Building 51 were used to create the “Holy Moses” and “Tiny Tim” rockets. The other four building groups included static firing buildings, service buildings, motor loading buildings, and an “experimental line” of laboratories. The service buildings were situated to the west at a distance from the other building groups and included administrative buildings, gate houses, offices, mess halls, and barracks.

In 1945, the Salt Wells Pilot Plant was built in an adjacent area to the China Lake Pilot Plant and was designed to inform manufacturing techniques and develop technologies. The Salt Wells Pilot Plant was used to test processes for producing the non-nuclear lenses used in manufacturing atomic bombs in support of the Manhattan Project. Salt Wells Pilot Plant buildings were constructed with heavily reinforced concrete and steel to protect the interior from potential blasts. For additional caution, the support buildings were separated from the production buildings (AECOM 2010).

The DoN made plans in 1944 to expand the facilities at Harvey Field and create a permanent airfield at the Naval Ordnance Test Station Inyokern site. The airfield was named in honor of Lieutenant Jack Armitage, who died while testing a Tiny Tim rocket at Naval Ordnance Test Station. By 1945, the airfield included three runways, three large hangars, numerous support buildings, and two obscure bomb pits known as “X-Pad.” By 1946, a warehouse, Quonset huts, and shade shelters were constructed. In the 1950s, Armitage Field continued to grow to meet the needs of weapons testing and evaluation. A fire station was enlarged, and mess halls, barracks, and supply buildings were constructed (Epsilon 2011).

In 1954, the Atomic Energy Commission abandoned the Salt Wells Pilot Plant to Naval Ordnance Test Station Inyokern; as a result, production capacity doubled when the two plants were combined. The closure of the Salt Wells Pilot Plant and the reorganization of facilities caused several buildings to be abandoned at the Salt Wells Pilot Plant and China Lake Pilot Plant, including the historic press buildings (JRP 1996). In 1959, the DoN made organizational changes and created the Bureau of Naval Weapons. This new management resulted in the merging of the Bureau of Aeronautics and the Bureau of Ordnance. Naval Ordnance Test Station officially changed its name to the Naval Weapons Center (NWC) China Lake in 1967, and its mission was revised to reflect its emphasis on technological research (Epsilon 2011).

During the Cold War, Naval Ordnance Test Station ended rocket production but continued experimental work on explosives and propulsion systems. The evolving needs of all of the research, development, testing, and evaluation at Naval Ordnance Test Station Inyokern, later NAWSCL, have altered the landscape of the Installation from the beginning for imminent needs in 1944, through the expansion of strategic missiles programs during the Cold War, to the present day at NAWSCL (AECOM 2010).

3.5.2.4 Native American Resources

Anthropological research has indicated that, during the pre-contact era, a number of different ethnolinguistic groups made varied use of the area now occupied by NAWSCL (Kroeber 1925; Steward 1929, 1933, 1938). Activities in the area ranged in intensity from habitation, including temporary campsites or villages occupied for extended periods of time, to more limited subsistence gathering activities, to use principally as a travel corridor. The Native American groups using the NAWSCL area included the Koso (Western Shoshone), the Kawaiisu (a distinct language related to Southern Paiute), the Owens Valley Paiute (Northern Paiute), the Tübatulabal (speakers of a Uto-Aztecan language related to Paiute-Shoshone), and the Chemehuevi (Kelly and Fowler 1986; Kroeber 1925; Steward 1938; Voegelin 1938; Zigmond 1986). With the exception of the Tübatulabal, these are all federally recognized tribes.

As indicated by the types of activities noted, some land uses in the area were of a more permanent nature, while others were more temporary or transitory. While land ownership was not the same as that considered by Europeans in post-contact historic times, certain indigenous groups did consider an area to be their core area, or area where they spent a significant part of their time during the year. These groups were, therefore, the ones most likely to live in villages or larger encampments in that area. Two of the groups, the Koso (Western Shoshone) and the Kawaiisu, may have considered the NAWSCL area, or portions of it, to be part of their core area. The Koso, who are also known as the Panamint or Timbisha Shoshone, had a traditional territory that included a significant portion of present-day NAWSCL, particularly areas within the North Range. They inhabited areas of the Argus, Coso, and Slate ranges within NAWSCL, but also ranged east into Panamint Valley and Death Valley (Thomas et al. 1986). A winter village of the Koso was recorded ethnographically at the Coso Hot Springs (Steward 1938).

The entire South Range area is within the traditional territory of the Desert Kawaiisu (Underwood 2004). While the Kawaiisu were focused in the southern Sierra Nevada and the Tehachapi Valley and Paiute Mountains, they made considerable use of areas extending as far east as the Panamint Valley (Steward 1938; Zigmond 1986). Ethnographic information gathered by Driver (1937) indicates that the Kawaiisu traveled regularly into the desert as far east as the Panamint Mountains, and Steward (1937, 1938) assigns the southern portion of Panamint Valley to this group. The Desert Kawaiisu, therefore, were regular visitors, not only to the South Range area, but also, occasionally, to the North Range area of NAWSCL (Garfinkel and Williams 2011).

Groups whose core areas did not include NAWSCL, such as the Owens Valley Paiute and Tübatulabal, also made temporary use of the NAWSCL area to exploit resources available in the region. The core area for the Owens Valley Paiute was focused primarily in an area north of NAWSCL and east of the Sierra Nevada in central Owens Valley. The abundance of natural resources in this area enabled the Owens Valley Paiute to lead a generally semi-settled existence, although their range extended into the northeastern portion of NAWSCL for subsistence activities and to visit the Coso Hot Springs (Liljeblad and Fowler 1986; Steward 1938). The Tübatulabal homeland and villages were mainly on the Kern Plateau and Isabella Basin in the far southern Sierra Nevada just west of NAWSCL (Smith 1978; Voegelin 1938). The Tübatulabal made occasional visits to the desert areas east of their core territory during plant gathering expeditions for certain seeds and bulbs, to gather salt from the shorelines of dry lakes, and to obtain rock materials such as chert and obsidian for use in the manufacture of stone tools and arrow points (Voegelin 1938). These desert excursions, undoubtedly, brought them into areas of

present-day NAWSCL. Also known to possibly make occasional forays into the NAWSCL area from the south were the Chemehuevi (Kroeber 1925). The Chemehuevi are a subgroup of the Southern Paiute (Kelly and Fowler 1986). It is thought that, prior to the 19th century, the Chemehuevi were largely located in the area north and west of the Colorado River. According to Kroeber, their territory "commenced in the Kingston Range, south of Death Valley … and stretched southward … to about the boundary of Riverside and Imperial counties" (1976). By the early to mid-19th century, the Chemehuevi had settled along the Colorado River in territory traditionally held by the Mojave (Kroeber 1925).

A location that appears to have been visited by most, if not all, of these cultural groups is Coso Hot Springs and associated Prayer Site. It has been documented ethnohistorically that the Coso Hot Springs were believed by Native American groups to have healing properties (Steward 1938), and they figured into Shoshone and Paiute legends (Brooks et al. 1979). Coso Hot Springs is a religiously significant site that is used today by those tracing their ancestry to various ethnic groups, including the Kawaiisu, Owens Valley Paiute, Southern Paiute, Shoshone, Yokuts, and Chumash. The springs have been formally identified by the Native American Heritage Commission and NAWSCL as a TCP.

3.5.2.5 Paleontological Resources

Paleontological resources are considered nonrenewable resources and are protected by various laws, ordinances, regulations, and standards, at the local, state and federal levels. NAWSCL contains the potential for the occurrence of significant paleontological resources due to a variety of geological circumstances. While known localities occur in both the North and South Ranges, in general, geologic circumstances make some areas more likely to contain paleontological resources than others. This is largely because paleontological resources occur almost exclusively in either sedimentary or metamorphosed sedimentary formations. Rock formations that are principally of igneous origin have little or no potential to contain paleontological resources. The North Range consists mostly of the mountainous terrain of the Argus and Coso Range mountains (Jennings et al. 1962; Streitz and Stinson 1974). These mountains consist, principally, of plutonic (granitic), igneous rocks and extrusive (basaltic) igneous rocks. Similar igneous formations are also present in the south-central area of the South Range, and the Slate Range mountains in the northern half of the South Range, are composed of granitic as well as metamorphic rocks that have also been determined to have a low paleontological resource potential (U.S. Navy 2012b). Consequently, any areas of NAWSCL where these formations are substantially exposed at the surface have a low sensitivity for paleontological resources.

Also well dispersed around NAWSCL, however, are formations with a higher sensitivity for paleontological resources. These deposits are mostly Quaternary in age and they occur in elevated areas within both the North and South Ranges primarily in the form of alluvial fan deposits, deposited in the intervening valleys from the surrounding high elevation mountain areas. While the uppermost layers of these fan deposits are considered to have low potential, with increasing depth they are considered to have a paleontological sensitivity, ranging from low to high (McLeod 2010 in U.S. Navy 2012b). Quaternary age sediments are also present in drainages and dry washes at lower elevations within both the North and South Ranges and they have also proved to contain significant fossil resources from within, and adjacent to, the South Range and throughout the region (McLeod 2010 in U.S. Navy 2012b). Consequently, Quaternary fluvial deposits within NAWSCL are considered to have a high paleontological sensitivity.

Several known localities exist within NAWSCL, that are documented to contain significant vertebrate fossils. These localities are situated in the southwestern portion of the North Range, and in the central-western and northeastern portions of the South Range. In the North Range locality, vertebrate fossils have been encountered in Quaternary alluvial and lacustrine deposits in and around the China Lake Basin area. Present in the central-western, Lava Mountains, portion of the South Range is the Pliocene age, Bedrock Spring Formation, which has been documented to contain significant vertebrate fossil

resources from within the South Range area and elsewhere, and is, therefore, considered to have high paleontological sensitivity. In the northeastern Shepherd Canyon area of the South Range, vertebrate fossils have been discovered in Quaternary alluvial deposits (U.S. Navy 2012b).

3.5.3 Regulatory Framework

Regulatory requirements concerning cultural resources on federal property are contained in Sections 106 and 110 of the National Historic Preservation Act (NHPA), 16 U.S.C. §§ 470–470w, Archaeological Resources Protection Act (ARPA), American Indian Religious Freedom Act (AIRFA), Native American Graves Protection and Repatriation Act (NAGPRA), and in NEPA (42 U.S.C. §§ 4321 et seq.). Added direction is provided by DoD instructions (DODINST 4715.3), and DoN instructions (NAVFACINST 11010.45, OPNAVINST M-5090.1, and SECNAVINST 11010.14A) and directives (DOD Directive 4710.1). The following provides a summary of statutes and regulations pertinent to NAWSCL.

3.5.3.1 National Historic Preservation Act

The NHPA, as amended (16 U.S.C. §§ 470–470w), is the fundamental law concerning the protection of cultural resources on federal land. Under the NHPA, its amendments, and implementing regulations, federal agencies are required to responsibly manage federally owned or controlled cultural resources. Federal agency requirements pertinent to NAWSCL are addressed in Sections 106 and 110 of the NHPA and its implementing regulations.

Section 106

Section 106 of the NHPA requires federal agencies to address the potential effects of their undertakings on historic properties and is generally applicable when an undertaking is the type of activity that has the potential to affect such properties. Section 106 regulations (36 CFR § 800.16[1]) define historic properties as archaeological sites, districts, buildings, structures, or objects that are included or eligible for inclusion in the National Register (36 CFR § 60). The NHPA defines significance in American history, architecture, archaeology, engineering, and culture as follows:

> "… districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or (b) that are associated with the lives of persons significant in our past; or (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or (d) that have yielded, or may be likely to yield, information important in prehistory or history" (36 CFR § 60.4).

Typically, to be eligible for listing in the National Register, a property must be at least 50 years old, or have reached 50 years old by the project completion date. A potential historic property less than 50 years of age may be eligible under National Register Criteria Consideration G if it can be demonstrated that sufficient time has passed to understand its historic importance (National Register Bulletin 15:43).

Section 106 and the implementing regulations provide a systematic mechanism for taking into account the effects on National Register-eligible resources from actions that are federally sponsored, funded, or licensed. It requires that the State Historic Preservation Officer (SHPO) and Native American tribes with historic ties to the area (and possibly other parties) be afforded an opportunity to comment on the Proposed Action. At NAWSCL, this requirement is addressed through the Installation's existing operating procedures for the environmental review process.

Section 110
Section 110 of the NHPA focuses on a more proactive management strategy, calling for identification and evaluation of National Register-eligible properties in advance of projected undertakings. Section 110 requires each federal agency to establish a preservation program to identify, evaluate, and nominate resources to the National Register. The preservation program must also provide for the protection and preservation of historic properties, particularly NHLs, to ensure that they are managed and maintained in a way that considers the preservation of their historic, archaeological, architectural, and cultural values. Contemporary uses for historic buildings are encouraged. Coordination with other agencies, Native American tribes, and interested parties is required. Guidelines for implementing Section 110 have been written by the Advisory Council on Historic Preservation (ACHP) and the National Park Service (NPS) (1989).

3.5.3.2 National Environmental Policy Act, *as amended*

NEPA (42 U.S.C. §§ 4321–4370c.) provides the statutory basis for considering impacts on the environment as a whole. The environment is defined to include cultural and natural resources, including paleontological resources. NEPA places the responsibility on the federal government to "preserve important historic, cultural, and natural aspects of our national heritage, and maintain, whenever possible, an environment [that] supports diversity and a variety of individual choice" (42 U.S.C. § 4331[b][4]). NEPA requires federal agencies to conduct an interdisciplinary analysis of the environmental consequences of their actions early in the decision-making process. For cultural resources, this analysis considers the effects of agency actions on physical features such as archaeological sites, buildings, and structures, as well as the practice of religious and other traditional lifeways that reflect community heritage. Implementing regulations are found in 40 CFR §§ 1500–1508, 36 CFR § 800.8, and 32 CFR § Part 775.

3.5.3.3 Federal Land Policy and Management Act of 1976

The FLPMA (P.L. 94-579; 43 U.S.C. §§ 1701 et seq.) mandates that public lands be managed in a manner that will protect the quality of scientific, scenic, historic, ecological, environmental, air and atmospheric, water resource, and archeological values. Title VI of the FLPMA establishes the California Desert Conservation Area. BLM, under the Secretary of the Interior, is the implementing agency for FLPMA. However, under 43 U.S.C. § 1781.h, the Secretary of Agriculture and Secretary of the Defense manage public lands that fall within their respective jurisdictions if the lands are located within or adjacent to a California Desert Conservation Area. Permits authorizing the collection of fossils for scientific purposes are issued under FLPMA.

3.5.3.4 Archaeological Resources Protection Act

Passed in 1979, ARPA (16 U.S.C. §§ 470aa–470mm) established civil and criminal penalties for theft or damage to archaeological resources from federally owned land. ARPA also established a permitting process for archaeological work that plans for the excavation or removal of archaeological materials on federal land. The ARPA also contains provisions for the preservation of archaeological collections and data, and for maintaining the confidentiality of archaeological location information. DoD implementing regulations are located in 32 CFR § 229.

The ARPA requires federal agencies to protect archaeological materials and associated records in perpetuity for their scientific and educational use. The implementing regulation, *Curation of Federally Owned and Administered Archaeological Collections* (36 CFR § 79), establishes standards, procedures, and guidelines for housing and preserving these materials. The Federal Records Act regulates the maintenance and disposal of documents that may have historic value and that are controlled by federal agencies.

3.5.3.5 American Indian Religious Freedom Act

The AIRFA (42 U.S.C. 1996) establishes as U.S. policy the protection of the rights of American Indians to practice their traditional religions. These practices include "access to sites (sacred places), possession of sacred objects, and the freedom to worship through ceremonies and traditional rite" (42 U.S.C. §1996). The AIRFA requires federal agencies to consider the effects of their actions on the exercise of Native American religion and to review policies and procedures, in consultation with traditional religious leaders, to determine appropriate measures to protect and preserve Native American religious cultural rights and practices.

3.5.3.6 Native American Graves Protection and Repatriation Act

The NAGPRA of 1990 (25 U.S.C. §§ 3000–3013, 18 U.S.C. §1170) includes three primary components: (1) procedures for the inadvertent discovery of Native American remains or sacred or funerary objects found on federal land; (2) requirements for the inventory of federal curation facilities with the subsequent repatriation of Native American remains and sacred objects to Native American descendants; and (3) provisions for the prosecution of those who knowingly sell, purchase, or transport Native American remains or sacred objects. Guidance for federal agency implementation of the NAGPRA is found in 43 CFR § 10.

3.5.3.7 Paleontological Resources Preservation Act

The Paleontological Resources Preservation Act (PRPA) was enacted as a result of the passage of the Omnibus Public Lands Management Act (OPLMA) of 2009, Public Law 111-011, Title VI, *Subtitle D. Paleontological Resources Preservation*. The PRPA sets forth regulations and provisions pertaining to paleontological resources on all federally administered lands. The act states that the appropriate secretary shall manage and protect paleontological resources on federal land using scientific principles and expertise. Permits are required for the collecting of paleontological resources except in certain cases of casual collecting for non-commercial purposes, as dictated by particular agency policy. Federal agencies overseen by the Secretary of the Interior or by the Secretary of Agriculture are developing plans for the management of paleontological resources and the implementation of the OPLMA-PRPA.

3.5.3.8 Department of Defense Directive 4710.1

DoD Directive 4710.1 (June 21, 1984) describes policy to integrate archaeological and historic preservation requirements with the planning and management of DoD activities. The directive assigns responsibilities and outlines procedures for DoD branches and departments.

3.5.3.9 Environmental Conservation Program

The DoD's Environmental Conservation Program (DoDINST 4715.3, May 3, 1996) implements policy, assigns responsibilities, and prescribes procedures for the integrated management of natural and cultural resources on property under DoD control. The Installation's ICRMP was developed in accordance with these guidelines, as well as guidelines being developed by the DoN.

3.5.3.10 Comprehensive Land Use Management Plan (CLUMP)

The 2005 CLUMP was developed in accordance with the CDPA of 1994 (16 U.S.C. § 410aaa et seq.). The CLUMP offers a long-term strategic plan that formalizes corporate processes for land use planning and management at NAWSCL. The minor land use changes that would result from a decision to increase military RDAT&E and training events would be reflected in the NAWSCL CLUMP. This plan provides an

integrated structure for the management of military missions, public health, safety practices, and environmental resource conservation programs. The CLUMP reflects the integration of range management strategies and management guidance from the Installation's INRMP and ICRMP.

3.5.3.11 Regional Planning Instruction Cultural Resources

The DoN's Regional Planning Instruction, Cultural Resources (NAVFACINST 11010.45, May 2001) assigns responsibilities and provides guidance for the protection and maintenance of historic resources, including National Register eligibility and curation. The protection of archaeological resources, as specified in the ARPA, and responsibilities under the NAGPRA are also discussed.

3.5.3.12 Department of the Navy Policy for Consultation with Federally Recognized Native American Tribes

This DoN instruction (SECNAVINST 11010.14A, October 11, 2005) clarifies DoN policies, procedures, and responsibilities when consulting with representatives of federally recognized Native American tribes on issues with the potential to impact protected tribal resources and rights.

3.5.4 Current Management Practices

NAWSCL is responsible for the identification and preservation of cultural resources located within the boundary of the Installation. NAWSCL conducts a Section 106 review of proposed undertakings. For those undertakings occurring in areas not previously inventoried, an inventory is conducted. Additionally, NAWSCL is responsible for identifying and protecting historic properties within lands owned or managed by the Installation, under Section 110. An ICRMP was developed under OPNAVINST M-5090.1 for NAWSCL and implemented in 2012 (Appendix K). The ICRMP is the primary vehicle for compliance with Section 106 (36 CFR § 800.3 – 800.6) at NAWSCL for identification, consultation, assessment of effects, and mitigation of adverse effects. The ICRMP provides an overview of the prehistory, the history, and the identified cultural and paleontological resources of the Installation as of 2009. Moreover, the ICRMP identifies processes for the management of cultural resources within specific areas of responsibility at NAWSCL, as it is the Installation's responsibility to consider the effects of its actions in order to avoid, minimize, or mitigate any impact to eligible cultural resources that might occur. Paleontological resources are addressed through the Installation's existing operating procedures for the environmental review process, as identified in the NAWS NEPA Instruction, and through continued paleoenvironmental studies and inventories for the identification and classification of fossil localities. Other plans developed for management of cultural resources at NAWSCL are the following:

- A management plan for the Sugarloaf Archaeological District (Cleland 1991), which provides information on the natural and cultural resources of the district, a research program, and a management program specific to the district. The document and an implementing PA were submitted to the SHPO; the PA has not been finalized.
- Historic preservation guidelines for the management of historic buildings and structures (Mikesell 1997). This document provides management recommendations for the historic buildings on the Installation that are consistent with 36 CFR § 800.
- A historic context for the historic trails and roads on NAWSCL (Baker and Maniery 2010). This internal NAWSCL management document provides background context and evaluation requirements, and presents strategies for the recordation and evaluation of historic roads and trails.

3.5.4.1 NHPA Section 106 Compliance Strategy

The NAWSCL strategy for Section 106 compliance includes inventories and evaluations conducted pursuant to Section 110 and Section 106 to identify National Register-eligible (i.e., historic properties) or unevaluated cultural resources that may be affected by individual undertakings. Absent a PA or other method for satisfactorily resolving the DoN's obligations under Section 106, if a particular undertaking has the potential to affect historic properties, consulting parties are identified and consultation is initiated.

NAWSCL has developed an ICRMP to address Section 106 requirements. The ICRMP was implemented in 2012 and identifies undertakings that qualify for a categorical determination of either no historic properties affected or no adverse effect. It allows the Cultural Resources Program Manager (CRPM), in consultation with NAVFAC SW or EMD qualified specialists, to determine whether historic properties are within an undertaking's Area of Potential Effect (APE) and would be adversely affected. If no historic properties would be affected then, under the provisions of the ICRMP, no SHPO consultation is required; however, reports would be forwarded to the SHPO, tribes, and interested parties and should concerns be expressed, the undertaking would be halted until consultation was completed.

3.5.4.2 NHPA Section 110 Compliance Strategy

Section 110 compliance strategies include inventories and evaluations to identify National Register-eligible archaeological sites, historic buildings and structures, and TCPs. Such strategies also may include a reexamination of areas previously surveyed, since the perception of significance may change over time.

3.5.4.3 Historic Buildings and Structures

To provide a framework for evaluating historic military structures at NAWSCL, *Historical Context for Evaluating Historic Buildings and Structures at the Ranges, Naval Air Weapons Station, China Lake NAWSCL* was developed (Mikesell 1997). This document provides a general historical context for the ranges, detailed descriptions of each facility on the ranges, identified preservation standards, and management recommendations for specific buildings. Extensive inventories and evaluations of the NAWSCL built environment were conducted in 1997 (JRP 1997). Updated studies are in progress, and as of June 2011, the study for the Mainsite area has been finalized (Epsilon 2011b).

3.5.4.4 Native American Values

Some areas on the Installation are prominent in Native American oral tradition and are considered important for their religious values. Religious and traditional activities at the Hot Springs are accommodated at NAWSCL through a formalized MOA with the Owens Valley Paiute-Shoshone Band of Indians and the Kern Valley Indian Community to allow visits to the Coso Hot Springs. This MOA has been in effect since 1979. As a result of government-to-government dialogue between participating Tribes and the DoN by and through the NAWSCL Commanding Officer, a new MOA was developed in January 2014 to improve access to Coso Hot Springs. The new agreement makes provision for increased access to Coso Hot Springs, by descendants of indigenous peoples that inhabited lands and/or conducted traditional cultural activities within the boundaries of NAWSCL, for the purpose of continued traditional cultural observances and practices. As of this writing, the new MOA has been signed by the DoN and one Tribe (Timbisha Shoshone). The Installation also allows access to Little Petroglyph Canyon for religious observances and other areas for traditional cultural purposes. Native American visits to these sites typically occur twice a year, in late summer and again in the early spring.

Native American visitations to Coso Hot Springs are reviewed on a case-by-case basis, and access to remote areas is closely controlled because of security and safety considerations. Coso geothermal development personnel need to follow range safety protocols in order to gain access to the National Register lands (Coso Hot Springs). NAWSCL takes an active role as cultural resource stewards, protecting these resources through careful monitoring for changes in the surface activity of the springs that may be a result of the DoN's Geothermal Development Program. The monitoring is directed through a Programmatic Memorandum of Agreement (PMOA) (U.S. Navy 1979b) between NAWSCL, the SHPO, and the ACHP. The PMOA addresses the DoN's compliance with Section 106 for cultural resources that could be affected as a result of the geothermal development program. The Coso Hot Springs monitoring reports are distributed annually by NAWSCL to the SHPO, ACHP, and the Owens Valley Piute Shoshone Band of Indians under the 1979 PMOA (U.S. Navy 1979b), and to other Native American groups who may have concerns regarding potential effects to the hot springs.

In addition to its ongoing monitoring and analysis of physical conditions at the Coso Hot Springs, the DoN commissioned a study to attempt to model possible association between geothermal production and observed changes to the Coso Hot Springs. The independent analysis of the Coso geothermal system, including changes that had been observed in Coso Hot Springs starting in 1988, noted that recorded increases in water levels and temperatures at Coso Hot Springs appear to correlate with the 1987 onset of the geothermal program (ITSI 2007). The study went on to state that their scientific hydrologic modeling could not confirm this seeming correlation and that these changes may also be attributed to natural fluctuations such as those observed at other geothermal systems that have not undergone commercial development.

Coso Hot Springs monitoring data on well temperatures, fluid chemistry, and surface manifestations document potentially cyclic thermal changes in the shallow outflow of the Coso geothermal system. Two decades of systematic temperature surveys in shallow monitoring sites and wells record step/plateau variation in temperatures in shallow aquifers beyond the seasonal variations that appeared to dominate the records for the first 10 years on monitoring of surface manifestations and shallow wells. Specifically, temperature monitoring records from the South Pool document erratic variation through 1988 with stepped increases in 1989, 1991, and 1993, leveling out at an average of 204 $^{\circ}$F through 2002. Since 2002, temperatures have dropped back down to the 160 $^{\circ}$F to 180 $^{\circ}$F range through 2010.

3.5.4.5 Public Access for Education and Research

The cultural resources at NAWSCL are of great interest to archaeologists, teachers, academicians, historians, rock art scholars, and Native Americans who recognize the importance of and value the cultural sites within the Installation. A number of indigenous Native American communities (including the Owens Valley Paiute, Timbisha Shoshone, Kawaiisu, and Tübatulabal) identify important places within NAWSCL in their oral traditions and tribal histories. For many years NAWSCL has allowed public access for educational and research purposes, and encourages academic research. The Installation has a history of supporting university programs.

The Coso petroglyphs are considered one of the more important expressions of indigenous rock art in the world (Gilreath 1999; Whitley 2000). Scholarly attention has been focused on these unique archaeological resources at NAWSCL since the 1920s. Coso prehistory has been a central subject for academic debate (Garfinkel 2006). Numerous scientific articles and several books on the petroglyphs provide varying perspectives on the meaning, function and age of the Coso rock art (Grant et al. 1968; Rogers 2009). NAWSCL has had an MOA with the Maturango Museum, providing controlled access to Little Petroglyph (Renegade) Canyon. This arrangement allows six museum-sponsored tours per month. Each tour is restricted to 50 people and is coordinated by experienced guides who receive specialized training by

authorized NAWSCL personnel. Although the MOA is no longer current, the Installation continues to allow tours to the canyon.

The obsidian quarries of the Coso Volcanic Field (Sugarloaf Mountain, West Cactus Peak, Joshua Ridge, and West Sugarloaf) and the Paleo-Indian remains of the China Lake Basin have also been central subjects for many scientific studies (Basgall 2000; Davis and Panlaqui 1978; Eerkins and Rosenthal 2004; Gilreath and Hildebrandt 1997). Academic research on NAWSCL has contributed greatly to the understanding of regional prehistory and to advanced studies in a number of fields, including obsidian dating of prehistoric sites.

Local residents of the Indian Wells Valley and vicinity often express an interest in and have historic ties to places within NAWSCL. Some local families trace their heritage to ranches, mines, and homesteads that are now protected within the confines of the Installation.

3.5.5 Description of Cultural Resources

3.5.5.1 Identified Cultural Resources

Based on the NAWSCL cultural resources survey database as of January 2012, 208,438 acres (84,351 hectares) or nearly 19 percent of NAWSCL, has been surveyed for cultural resources under Section 106 and Section 110. Figure 3.5-1 indicates the areas surveyed on the North Range, which comprise nearly 142,296 acres (57,585 hectares), or more than 19 percent of the range. The areas surveyed on the South Range are indicated in Figure 3.5-2. These surveyed areas comprise over 66,142 acres (26,766 hectares), or approximately 13 percent of the range. These investigations have resulted in the identification of 3,591 prehistoric and historic archaeological sites. The majority of these resources are prehistoric (3,383 have been recorded, 208 are historic). Past investigations have largely focused on surveys, with inventory efforts conducted under both Section 106 and Section 110. More recently, there has been increasing focus on evaluation efforts for both historic and prehistoric resources.

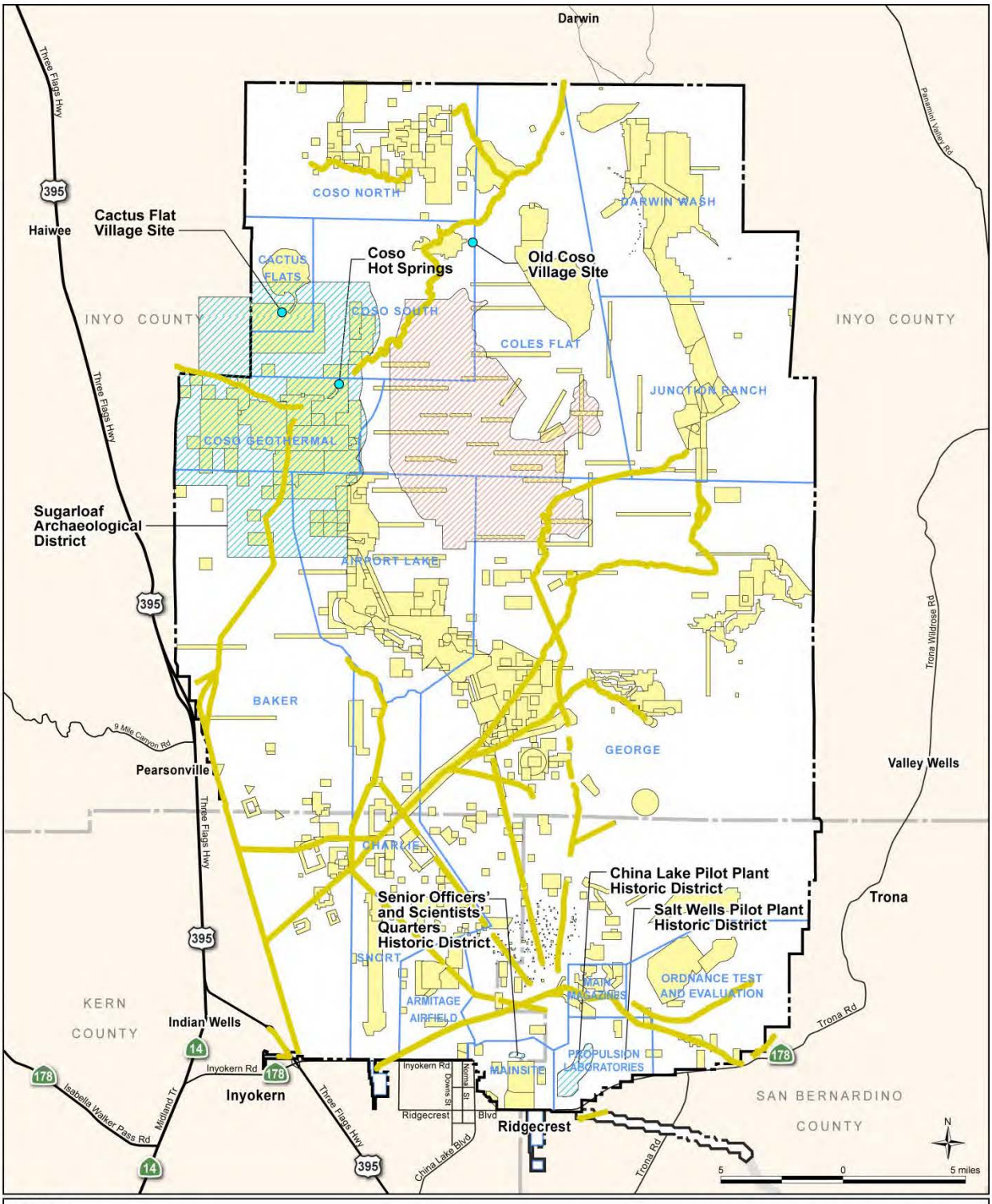
Many of the numerous historic roads and trails within NAWSCL are still in use by the military. The roads date generally from between 1874 and 1920. Several historic roads were identified and mapped based on archival research (Baker and Maniery 2010).

In fiscal year 2010, segments of several of the NAWSCL roads were field checked and recorded (Giambastiani et al. 2011). Similar field efforts were also conducted in fiscal year 2011. Historic roads that are in the NAWSCL database as of November 2011 are segments of the Buckley and Kelly Stage Road, Shepard's Road/Lone Pine to Panamint Road, Wilson Canyon Road, Argus Springs Road, Argus Sterling Mine Road, and Lookout Branch Road within the North Range (Figure 3.5-3), and segments of 20-Mule-Team Road and Lanes Road/Meyerstein Road/San Bernardino to Panamint Road in the South Range (Figure 3.5-4).

3.5.5.2 Evaluated Cultural Resources

Based on the archaeological resources database for NAWSCL, of the 3,591 archaeological sites that have been recorded at NAWSCL as of January 2012, 462 have been evaluated for National Register eligibility. Of these evaluated resources, 369 are prehistoric, 70 are historic, and 23 contain both prehistoric and historic components.

NAWSCL contains two archaeological districts that are listed in the National Register: Coso Hot Springs and Coso Rock Art District NHL (U.S. Navy 2012b; U.S. Navy 2004a). Coso Hot Springs was listed for its importance to Native Americans and for its historic buildings. The springs figure into Paiute and



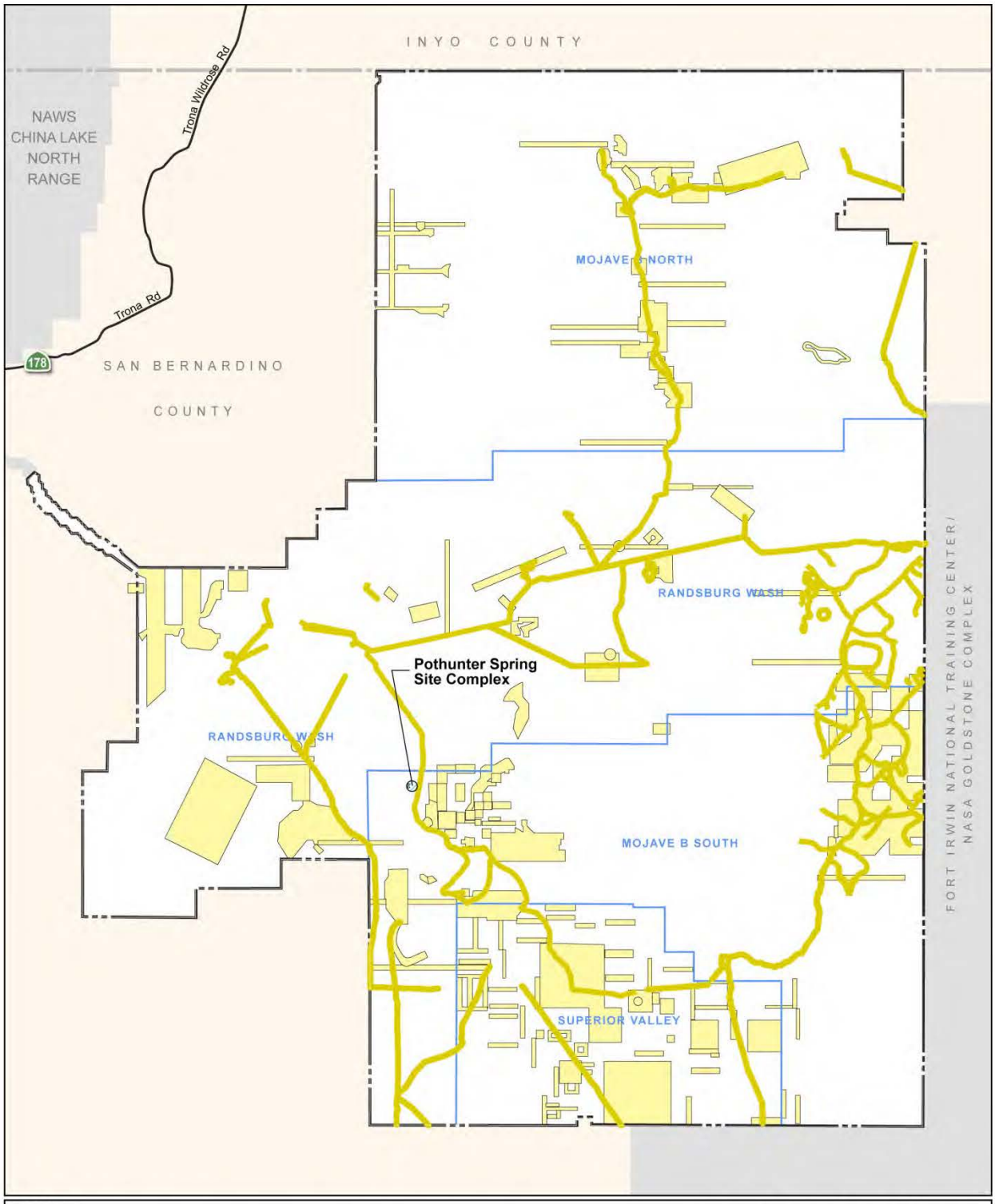
LEGEND

- Archaeological Survey Area
- Coso Rock Art District National Historic Landmark
- National Register Eligible Site and District
- Archaeological Linear Survey
- Land Management Unit
- Installation Boundary
- Highway/Road
- County Boundary

CHINALAKEEIS/031

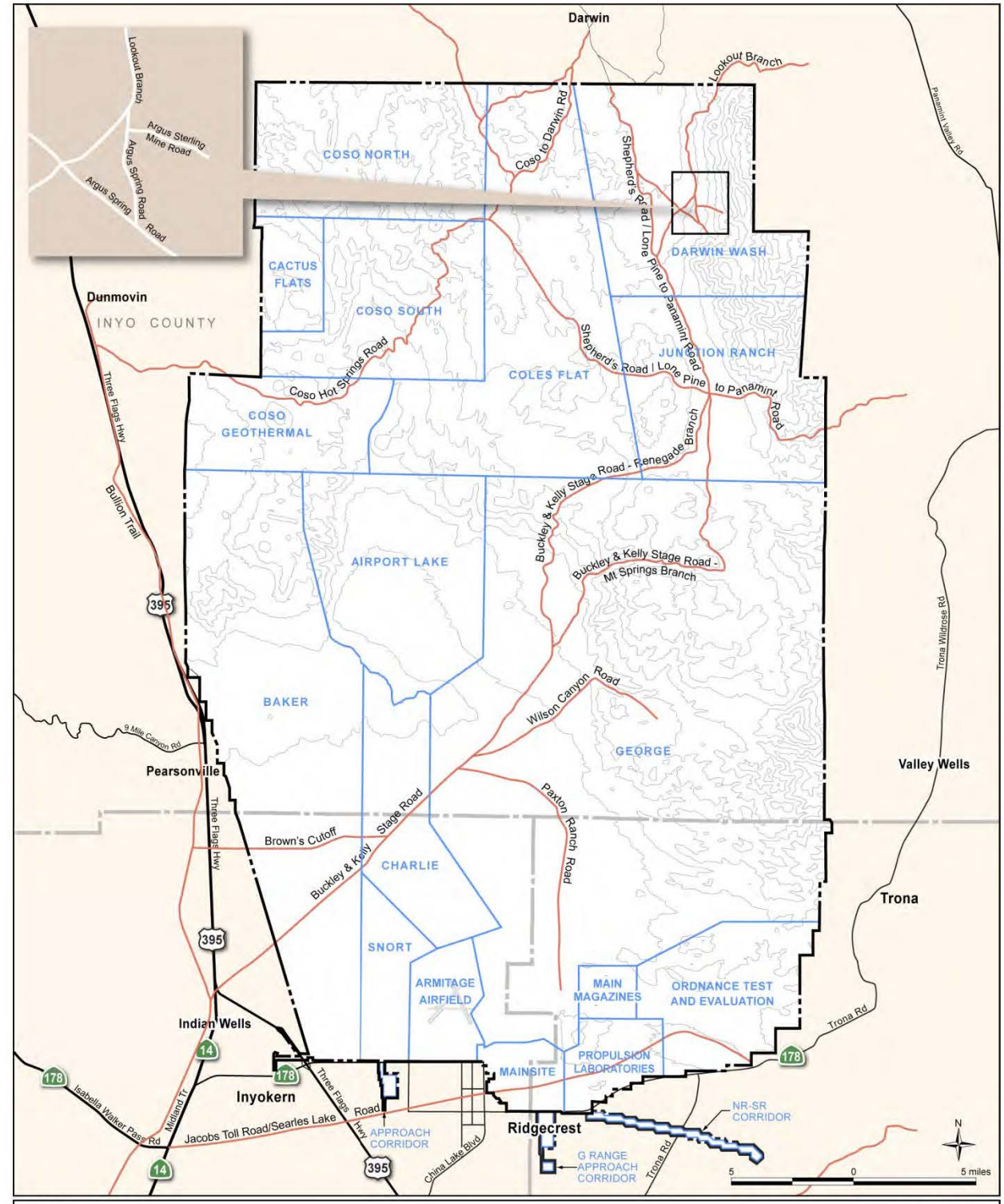
Known Cultural Resources, Districts, and Surveys, North Range

Figure 3.5-1



Known Cultural Resources, Districts, and Surveys, South Range

Figure 3.5-2



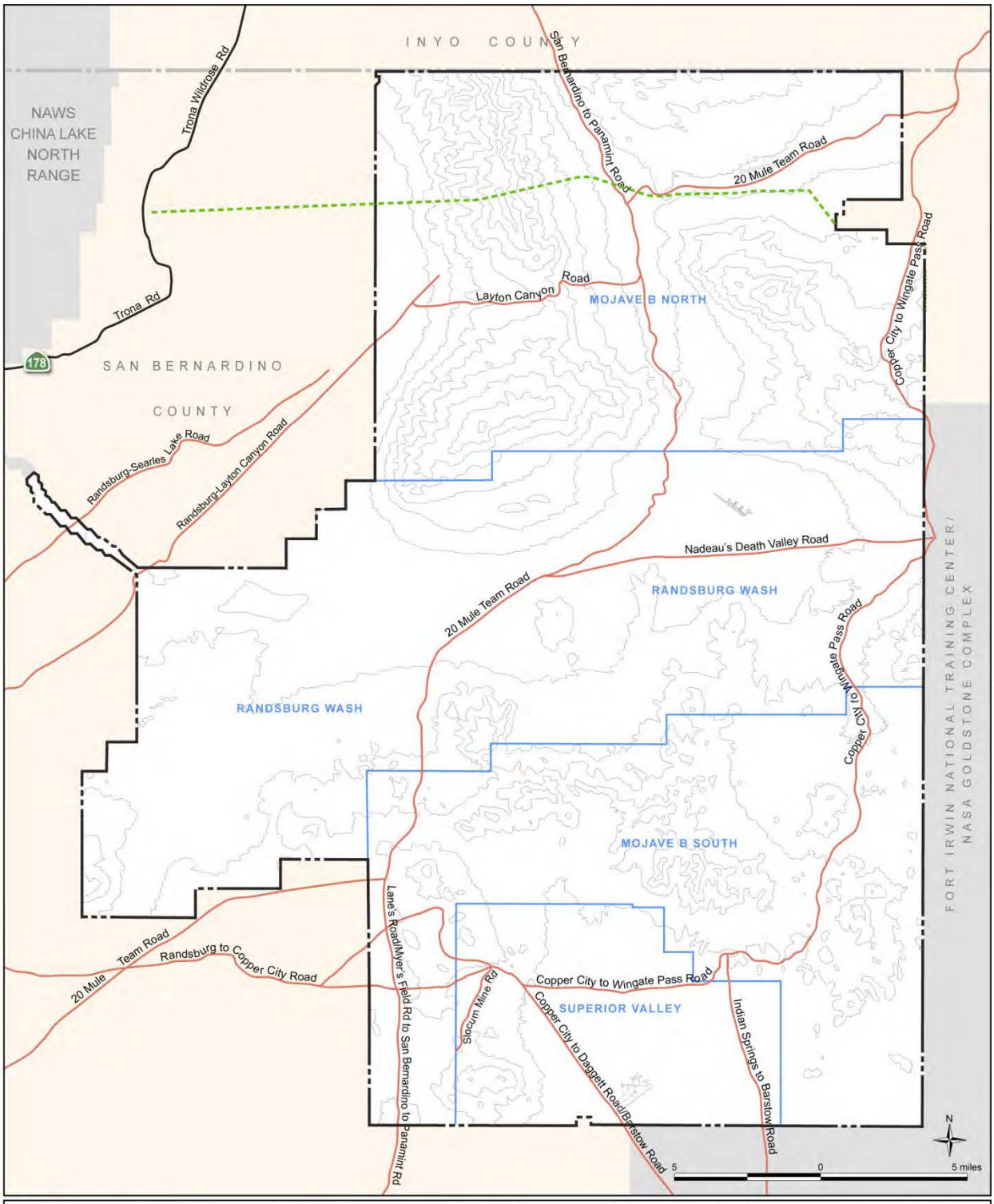
LEGEND
- Historic Road
- Land Management Unit
- Installation Boundary
- Highway/Road
- County Boundary
- 500-Ft Contour

Note: Bullion Trail is nationally known as the Midland Trail.

CHINALAKEEIS/067

Historic Roads North Range

Figure 3.5-3


INYO COUNTY
NAWS CHINA LAKE NORTH RANGE
Trona Wildrose Rd
San Bernardino to Panamint Road
20 Mule Team Road
Copper City to Wingate Pass Road
Layton Canyon Road
MOJAVE B NORTH
Trona Rd
178
SAN BERNARDINO COUNTY
Randsburg-Searles Lake Road
Randsburg-Layton Canyon Road
Nadeau's Death Valley Road
RANDSBURG WASH
20 Mule Team Road
Wingate Pass Road
Copper City to
RANDSBURG WASH
MOJAVE B SOUTH
FORT IRWIN NATIONAL TRAINING CENTER/ NASA GOLDSTONE COMPLEX
Lane's Road/Myer's Field Rd to San Bernardino to Panamint Rd
Team Road
Randsburg to Copper City Road
20 Mule
Copper City to Wingate Pass Road
Slocum Mine Rd
SUPERIOR VALLEY
Copper City to Daggett Road/Barstow Road
Indian Springs to Barstow Road
N
5
0
5 miles
LEGEND
Historic Road
Land Management Unit
Installation Boundary
Highway/Road
County Boundary
Approximate Route of Monorail
500-Ft Contour
CHINALAKEEIS/068
Historic Roads South Range
Figure 3.5-4

Shoshone legends (Brooks et al. 1979) and were believed to have medicinal properties. The Coso Hot Springs have been designated a TCP (U.S. Navy 2012b). The Coso Rock Art District achieved NHL status in 1964, and was, therefore, automatically listed in the National Register when the NHPA was passed in 1966. Encompassing 36,450 acres (14,751 hectares) and including 388 prehistoric sites that qualify as contributors to the district, the Coso Rock Art District is one of the largest rock art concentrations in North America. The Coso rock art panels, estimated to contain hundreds of thousands of rock art elements, are some of the most impressive in the country (Gilreath 1999). Three additional archaeological districts were determined eligible for the National Register but are not formally listed: the Sugarloaf Archaeological District, Cactus Flat Village, and the Pothunter Spring Archaeological District. Nomination packets have been prepared for those three districts.

The Sugarloaf Archaeological District includes the Sugarloaf Mountain, West Cactus Peak, Joshua Ridge, and West Sugarloaf obsidian quarries, which were used extensively prehistorically. The district encompasses 44,160 acres (17,871 hectares) and includes 480 sites as contributing elements. Cactus Flat Village, a major habitation site with two loci, is within the area encompassed by the Sugarloaf Archaeological District. The Pothunter Spring Archaeological District encompasses rock shelter sites of exceptional quality, with rich midden deposits and cultural assemblages (U.S. Navy 2012b; U.S. Navy 2004a).

The built environment at NAWSCL includes more than 2,700 historic buildings and structures associated with Naval Ordnance Test Station; all of these resources have been evaluated. Of these, 214 have been determined eligible as an independent property or as a contributor to a district. Two historic districts are recommended eligible for the National Register: China Lake Pilot Plant and Salt Wells Historic District. SHPO concurrence was received by the DoN for a third district: the Senior Officers' and Scientists' Quarters District (U.S. Navy 2012b).

3.5.6 Cultural and Paleontological Resources and Existing Land Disturbance Patterns at Target and Test Areas

Any ground-disturbing activities have the potential to impact cultural resources. Primary ground disturbance at NAWSCL occurs principally from munitions use. Within NAWSCL, ground disturbance related to munitions use is limited to well-defined areas that comprise the Installation's targets and test areas. The approximately 656-foot-wide (200-meter-wide) buffer zones established around these areas may receive inadvertent munitions and weapons impacts associated with use of the targets and test areas. A major contributor of disturbances in the buffer zones is through the placement of cameras and test monitoring equipment, and ORV use.

During 1998, field investigations at NAWSCL focused on characterizing disturbance patterns at the targets and test areas and determining whether cultural resources were present. The sample surveys conducted for selected targets found that those impact areas generally contained no surface features. Disturbances outside of the designated target areas generally were found to be limited to a narrow band of approximately 656 feet (200 meters) around each target impact area (Tetra Tech 1999). A complete report of these investigations is contained in the Installation's technical report, *Characterization of Disturbance and Biological and Cultural Resources Within the Target Buffer Areas* (U.S. Navy 1999). As a result of this field study, NAWSCL formally designated the 656-foot (200-meter) bands directly adjacent to impact areas as buffer zones (U.S. Navy 2004a). Studies (e.g., Duran and Johnson 2010; Hildebrandt and Jones 1997) have found that some target areas contain sites that have been determined eligible for the National Register or that have not been evaluated.

Many of the roads that cross the Installation have been improved or maintained, and are currently used by the military for travel or support activities associated with RDAT&E or GTT. As described in Chapter 2,

vehicular support for GTT is restricted to existing travel surfaces (i.e., roads, turnouts, parking lots), target areas, test sites, and instrumentation sites. GTT with dismounted ground troops may occur in disturbed and undisturbed areas. GTT occurs in both the North and South Ranges.

Several known localities exist within NAWSCL, that are documented to contain significant vertebrate fossils. Thirty-eight fossil localities have been identified within or adjacent to NAWSCL. On the North Range, those localities are around dry China Lake. Fossil localities also occur in the central-western portion of the South Range and in Shepherd Canyon in the northeastern portion of the South Range (U.S. Navy 2012b).

3.5.6.1 North Range

Site counts and acreages of areas surveyed as described below are based on NAWSCL November 2011 GIS data.

Airport Lake Land Management Unit

As of July 2011, 55 archaeological field surveys had been conducted of the various targets and buffer areas in the Airport Lake LMU (Figure 3.5-5). The combined surveys account for nearly 81 percent of the targets and test areas and more than 93 percent of the buffers; approximately 11 percent of the targets and test areas and less than 7 percent of the buffers have not been surveyed. These inventory investigations identified 220 archaeological sites, of which 14 have been evaluated for the National Register. Of these evaluated sites, nine were determined to be National Register eligible; five sites are not eligible. No historic roads have been identified within the Airport Lake LMU.

Armitage Airfield Land Management Unit

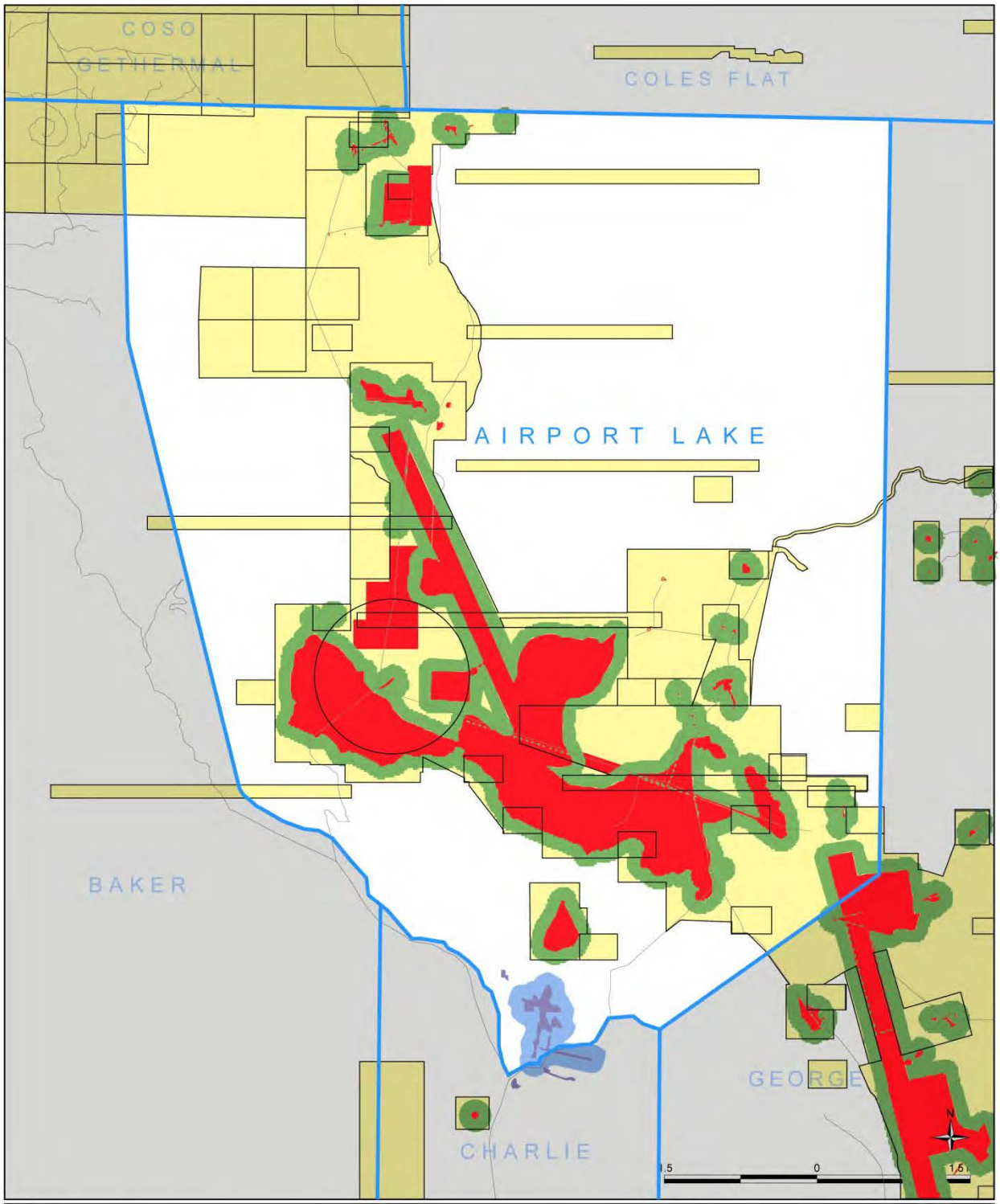
Cultural resources survey has been conducted for more than 70 percent of the target areas in the Armitage Airfield LMU. No archaeological sites were identified during the investigations. No test areas or buffers are currently within this LMU. No historic roads have been identified within the Armitage Airfield LMU.

An eligibility investigation conducted in 1997 of 30 buildings, structures, and/or objects (BSOs) at Naval Air Facility China Lake (JRP 1996), known as Armitage Airfield, identified one BSO (Hangar 1) as eligible for listing in the National Register, and the DoN received SHPO concurrence. A more comprehensive evaluation study recently conducted of Armitage Airfield included several buildings that have since reached the 50-year benchmark (Epsilon 2011b). Of the 105 BSOs evaluated by Epsilon, three were identified as National Register-eligible.

Baker Range Land Management Unit

Ten target impact areas and three test areas are within the Baker Range LMU (NAWCWD 2011: Appendix B). Cultural resources inventories have been conducted for 12 percent of the target and test areas and for more than 87 percent of the buffers (Archaeological Research Services and Far Western Anthropological Research Group 1999; Tetra Tech 1999). These investigations have identified 157 historic and prehistoric archaeological sites. Of these sites, 129 are unevaluated, 14 have been determined eligible for the National Register, 11 are not eligible, and three have been recommended not eligible.

Additionally, segments of two historic roads are within the Baker Range LMU: Brown's Cut-off and the Buckley and Kelly Stage Road (see Figure 3.5-3). In 1997, the alignment of this latter road was mapped by JRP based on archival research. In this work, JRP referred to it as the "Nadeau Freight Road." The road was formally recorded as the Buckley and Kelly Stage Road in 2004 by King. These roads have been evaluated for the National Register and determined to be not eligible/non-contributing.



Cultural Resources Survey Areas at Airport Lake Targets

Figure 3.5-5

Cactus Flats Land Management Unit
The Cactus Flats test areas have been completely surveyed, as well as nearly 99 percent of the buffers; there are currently two test areas and no target areas in Cactus Flats (NAWCWD 2011: Appendix B). The investigations have identified 114 archaeological sites. Of these 114 sites, 18 have been evaluated. Sixteen were found eligible for the National Register and two are not eligible. Ninety-six sites have not yet been evaluated; however, 31 are currently undergoing evaluation. Twelve of the 16 eligible sites have undergone mitigation for potential effects to historic properties (McDonald and Flenniken 1996).

Charlie Range Land Management Unit
Seven target impact areas and one test area are located within the Charlie Range LMU (NAWCWD 2011: Appendix B). Surveys have been conducted for more than 19 percent of the targets and test areas and for more than 82 percent of the buffers, identifying 148 archaeological sites. Of these 148 sites, 70 have been evaluated. Ten were found eligible for the National Register, 46 are not eligible, and 14 were recommended as not eligible. Seventy-eight sites have not yet been evaluated. Additionally, a segment of one historic road—the Renegade Branch of the Buckley and Kelly Stage Road—has been formally recorded within the Charlie Range LMU (see Figure 3.5-3).

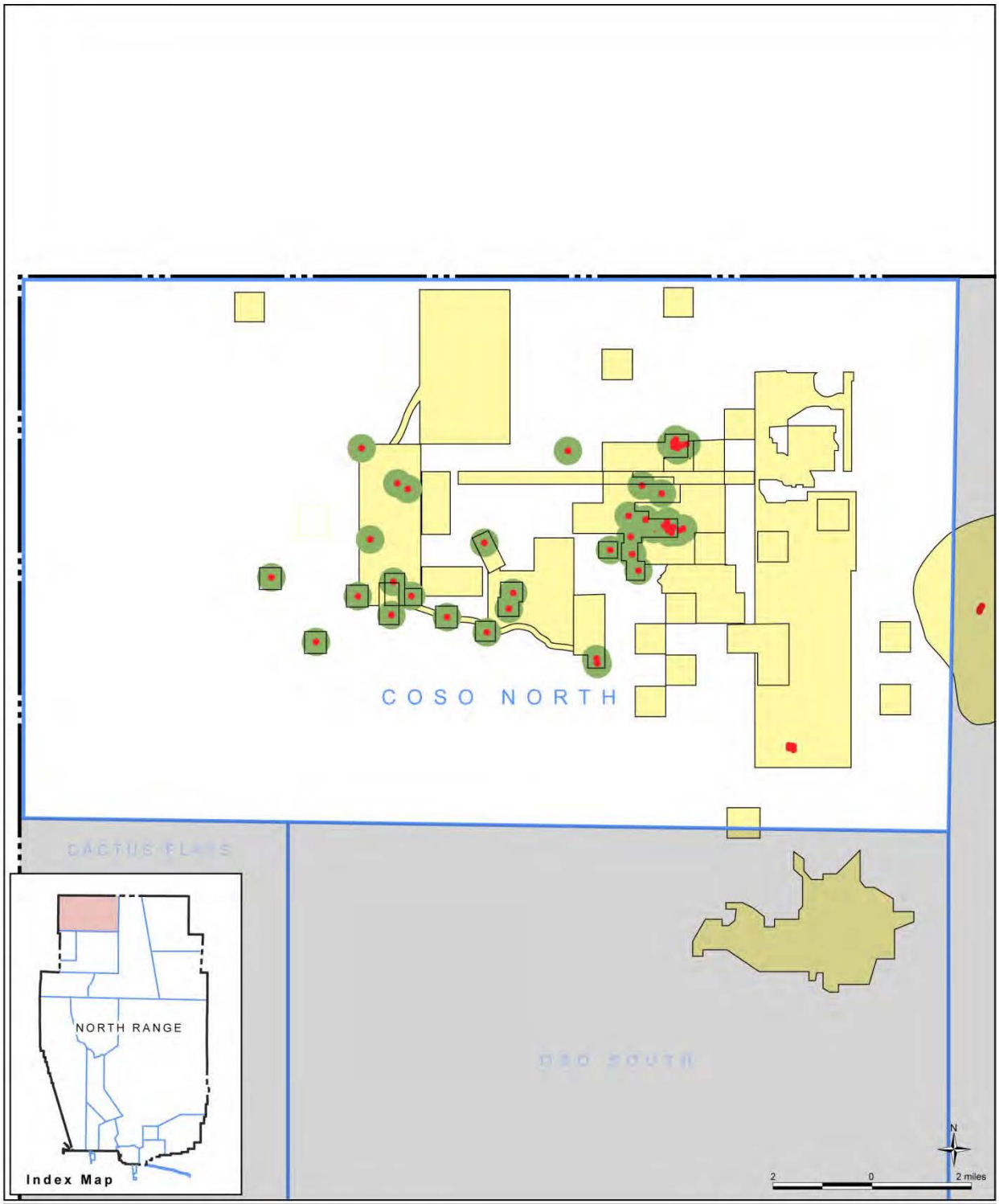
Coles Flat Land Management Unit
The Coles Flat LMU lies within the north-central portion of the North Range (see Figure 1-2). Target areas within the Coles Flat LMU are Coles Flat, Safeway, and four smaller target areas located at Wild Horse Mesa and east of the Coso Geothermal LMU (NAWCWD 2011: Appendix B). Nearly 95 percent of the targets and test areas and 93 percent of the buffers have been surveyed, resulting in the identification of 256 archaeological sites. One hundred fifty-six sites within the Coles Flat LMU are located within the Coso Rock Art District NHL and contain features that contribute to the Districts eligibility. Twenty-one sites have been determined individually eligible for the National Register, nine sites are not eligible, six sites were recommended eligible, and the remainder are unevaluated. One of these cultural resources has been evaluated for the National Register and has undergone mitigation for potential effects to historic properties.

Historic roads that lie partially within this LMU are Crystal Wash, Coso Hot Springs Road, Coso to Darwin Road, and Shepard's Road/Lone Pine to Panamint Road (see Figure 3.5-3). Segments of Shepard's Lone Pine to Darwin/Panamint City road have been recorded and evaluated not eligible. The Coso Hot Springs Road has been recorded and determined eligible, the Crystal Wash Road has not yet been evaluated.

Coso North Land Management Unit
More than 98 percent of the targets and test areas and nearly 78 percent of the buffers within the Coso North LMU have been surveyed (Figure 3.5-6) (Hildebrand and Ruby 1999; Tetra Tech 1999), identifying 488 archaeological sites. Of these 488 sites, 95 have been evaluated. Seven were found eligible for the National Register, five are not eligible, 12 were recommended as not eligible, and 71 were recommended as eligible. The remainder are unevaluated. One historic road, the Crystal Wash Road (see Figure 3.5-3), is partially within the Coso North LMU and has not been formally recorded.

Coso South Land Management Unit
One target, Coles Sam Site, is within the Coso South LMU. Cultural resources surveys have been conducted for more than 53 percent of the target area and 100 percent of the buffer, identifying 249 archaeological sites. Of these 249 sites, 56 are located within the Sugarloaf District; the remaining 193 sites have not received any recommended or formal eligibility.

Historic roads that lie partially within this LMU are Crystal Wash, Coso Hot Springs Road, Coso to Darwin Road, and Shepard's Road/Lone Pine to Panamint Road (see Figure 3.5-3). None of these roads have been evaluated.



Cultural Resources Survey Areas at Coso North Targets

Figure 3.5-6

Darwin Wash Land Management Unit

Darwin Wash target is within this LMU. Cultural resources inventories have been conducted for nearly 99 percent of the training and test areas, and nearly 3 percent of the test area buffer. The investigations identified 72 historic and prehistoric archaeological sites. Of these 72 sites, six have been evaluated. Three sites were determined to be not eligible for the National Register and, three were recommended as not eligible. Sixty-six sites have not yet been evaluated. Historic roads that are partially within the Darwin Wash LMU are Lookout Branch Road, Argus Spring Road, and Shepard's Road/Lone Pine to Panamint Road; segments of the latter two roads have been recorded on Department of Parks and Recreation forms. Shepard's Road has been evaluated and determined to be not eligible; the other historic roads have not yet been evaluated for the National Register.

George Range Land Management Unit

Sixteen target areas and four test use areas are located within the George Range LMU (NAWCWD 2011: Appendix B). Surveys have been conducted for nearly 41 percent of the target and test areas, and nearly 53 percent of the buffers, identifying 765 archaeological sites. Of these 765 sites, 161 have been evaluated. Six were found eligible for the National Register, 45 sites are not eligible, 52 sites were recommended as not eligible, and 58 sites were recommended as eligible; the remaining sites have not yet been evaluated. Sites found along the China Lake shorelines and drainage basin include some of the oldest sites identified on NAWSCL. The George Range LMU encompasses portions of the Coso Rock Art District NHL, although this resource is not within any of the impact areas. Thirty-seven of the sites located within the George Range LMU are within the Coso Rock Art District NHL and contain features that contribute to the Districts eligibility.

Several historic roads are partially within the George Range LMU: Shepard's Road/Lone Pine to Panamint Road, the Renegade and Mountain Springs Branches of the Buckley and Kelly Stage Road, and Wilson Canyon Road. All of these have been formally recorded. Paxton Ranch Road has not yet been recorded. The Renegade Branch of the Kelly Buckley line has been evaluated and determined not eligible for the National Register, the Mountain Springs Branch has been recorded and determined not eligible, the upper portion of Wilson Canyon Road has been evaluated and determined eligible, and a portion of that same road located in the valley has been determined not eligible.

Junction Ranch Land Management Unit

One target and several test areas are within the Junction Ranch LMU (NAWCWD 2011: Appendix B). Nearly 99 percent of the test areas and targets have been surveyed; no buffers are within the Junction Ranch LMU. Two hundred and one archaeological sites have been recorded as a result of the investigations. Of these 201 sites, 33 have been evaluated. Ten sites have been determined to be not eligible for the National Register, and 23 sites were recommended as not eligible; 168 sites have not yet been evaluated. Historic roads that are partially within this LMU are the Renegade and Mountain Springs Branches of the Buckley and Kelly Stage Road—which have been formally recorded—and the Shepard's Road/Lone Pine to Panamint Road. Renegade Branch has been evaluated as not eligible for the National Register; the majority of Mountain Springs Branch has also been evaluated as not eligible though there are small segments that still need to be recorded. Segments of Shepard's Road have been evaluated and determined not eligible.

Main Magazine Land Management Unit

Three archaeological sites have been identified within the Main Magazine LMU. Of the three sites, two were evaluated and determined to be not eligible for the National Register; the remaining site has not received a recommendation or formal evaluation.

Mainsite Land Management Unit
Six archaeological sites have been identified within the Mainsite LMU. Of the six sites, two were evaluated and determined to be not eligible for the National Register; the four remaining sites have not received a recommendation or formal evaluation.

Ordnance Test and Evaluation Land Management Unit
Nearly 55 percent of the 14 test areas and nearly 43 percent of the buffers in the Ordnance Test and Evaluation LMU have been surveyed. Ten archaeological sites were identified and evaluated. Of the 10 sites, seven have been evaluated. Four sites have been determined to be not eligible for the National Register, three sites were recommended as not eligible, and three sites have not yet been evaluated. One historic road, the Jacobs Toll Road/Searles Lake Road, has been identified within this LMU. The road has not been evaluated.

Propulsion Laboratories Land Management Unit
Six archaeological sites have been identified within the Propulsion Laboratories LMU. Of the six sites, five have been evaluated. One site was determined to be eligible for the National Register, one site was determined to be not eligible, three sites were recommended as not eligible, and one site has not received a recommendation or formal evaluation.

SNORT Land Management Unit
More than 99 percent of the test areas and more than 98 percent of the buffers within the SNORT LMU have been surveyed. Twenty-three archaeological sites have been identified. Of these 23 sites, 21 have been evaluated. Nine sites have been determined to be not eligible for the National Register, 12 sites were recommended as not eligible, and two sites have not received a recommendation or formal recommendation of eligibility. In 1999, the SNORT Track and some of the associated buildings were evaluated and found eligible for the National Register (Mikesell 1999).

3.5.6.2 South Range

Site counts and acreages of areas surveyed as described below are based on NAWSCL November 2011 GIS data.

Mojave B North Land Management Unit
The Mojave B North LMU encompasses the Wingate Airfield and Convoy impact target areas (Convoy, Convoy East, and Convoy South) and nine additional targets and test areas (NAWCWD 2011: Appendix B). Wingate Airfield has been surveyed 100 percent, resulting in the identification of three sites (WESTEC Services 1979). These sites include the Layton monorail, which has been evaluated and recommended ineligible for the National Register (JRP 2000). One historic and one prehistoric archaeological site have not been evaluated.

Cultural resources surveys have been conducted for 100 percent of the buffer zones for the Convoy target area and nearly the entire Convoy South target area (Clewlow and Walsh 1996; Deis 2003; WESTEC Services 1979); a small portion (approximately 5 acres [2 hectares]) of this latter buffer was not surveyed due to extremely steep terrain. Three prehistoric sites and one historic site were recorded within these buffer zones; none of these resources have been evaluated for the National Register. Additional archaeological sites have been recorded in the vicinity of the target areas and elsewhere in the LMU, such as along roads leading to the target areas.

Nearly 88 percent of the target and test areas and more than 96 percent of the buffers for the Mojave B North LMU have been inventoried. Approximately 22 percent of the targets and 4 percent of the buffers have yet to be surveyed. Overall, 118 archaeological sites have been identified. Of the 118 sites, three

have been recommended as not eligible for the National Register and 115 sites have not received a recommendation or formal recommendation of eligibility.

Historic roads that lie partially within the Mojave B North LMU are the Copper City to Wingate Pass Road, Layton Canyon Road, the eastern extent of the Randsburg/Layton Canyon Road, the 20-Mule-Team Road, and the Lane's Road/Meyerstein Road/San Bernardino to Panamint Road. None of the roads have been evaluated.

Randsburg Wash Land Management Unit

Six target areas and 33 test areas are located within the Randsburg Wash LMU (NAWCWD 2011: Appendix B). More than 37 percent of the targets and test areas and nearly 87 percent of the buffers have been surveyed for cultural resources. The survey of 500 acres (202 hectares) at Charlie Airfield and surrounding buffer in 2001 resulted in the recordation of five sites (Leach-Palm 2001). Four of these sites were found eligible for the National Register and one site is not eligible.

The 5-inch (12.7-centimeter) impact area was initially partially surveyed, with no cultural resources observed. The remainder of this area, as well as the 5-inch (12.7-centimeters) gunline, UAV circle, Twin Towers target and buffer areas, and the buffer areas for the igloos, were subsequently surveyed to 100 percent by Deis (2003), who found no archaeological sites. Overall, 118 archaeological sites have been identified. Of the 118 sites, 11 have been recommended as not eligible for the National Register and the remaining sites have not received a recommendation or been formally evaluated.

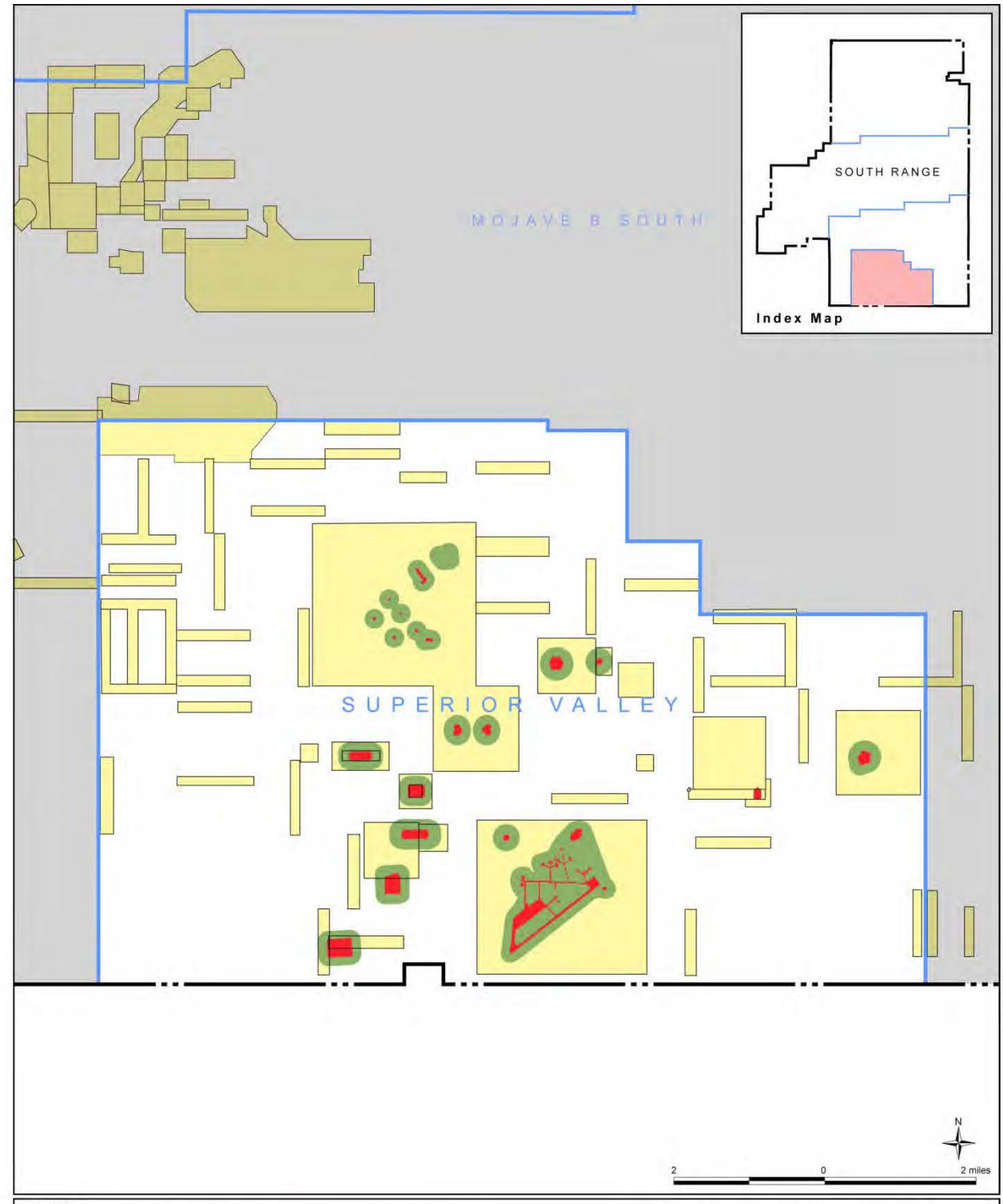
Historic roads identified to be partially within the Randsburg Wash are Nadeau's Death Valley Road, Copper City to Wingate Pass Road, and Lane's Road/Meyerstein Road/San Bernardino to Panamint Road. This latter road has been field mapped and recorded on Department of Parks and Recreation forms.

Mojave B South Land Management Unit

Survey has been conducted for nearly 88 percent of the target and test areas, and approximately 25 percent of the target buffer near Pilot Knob. Three hundred seventy-three archaeological sites have been identified. Of these 373 sites, two sites have been determined to be eligible for the National Register and the remainder are unevaluated. Management practices have changed since they were originally recorded, as a result, isolates are no longer assigned trinomial numbers and they are categorically treated as not eligible for the National Register. Historic roads that have been identified partially within the Mojave B South LMU are Copper City to Wingate Pass Road, Randsburg to Copper City Road, Slocum Mine Road, and Lane's Road/Meyerstein Road/San Bernardino to Panamint Road. This latter road has been field mapped and recorded on Department of Parks and Recreation forms. None of the roads have been evaluated.

Superior Valley Land Management Unit

Cultural resources surveys have been completed for more than 77 percent of the target and training complex, and nearly 97 percent of the target buffer (Figure 3.5-7) (Deis 2003; Quillen 1979; URS Consultants 1989). Eighty-three archaeological sites have been identified. Of these 83 sites, six sites have been evaluated and determined to be not eligible for the National Register; the remaining 77 sites have not yet been evaluated. Historic roads that are partially within the Superior Valley LMU are the Copper City to Wingate Pass Road, Copper City to Daggett Road/Barstow Road, Indian Spring to Barstow Road, and the Slocum Mine Road. Segments of the Copper City to Wingate Road have been evaluated; however, none of the segments were determined eligible for the National Register. The other roads have not been evaluated.



Cultural Resources Survey Areas at Superior Valley Targets

Figure 3.5-7

This page intentionally left blank.

3.6 GEOLOGY AND SOILS

This section describes the geologic and soil environment at NAWSCL, including physiography; general geology, faults, and seismicity; soils; and liquefaction potential.

3.6.1 Region of Influence

The ROI for geology and soil resources consists of areas within NAWSCL boundaries.

3.6.2 Regulatory Framework

Under California Public Resources Code § 2622 (Alquist-Priolo Earthquake Fault Zoning Act of 1972), the purpose of which is to prevent the construction of buildings used for human occupancy on the surface trace of active faults, the California Division of Mines and Geology has delineated seismic zones deemed to be "sufficiently active and well-defined as to constitute a potential hazard to structures from surface faulting or fault creep." The state geologist is required to continually review new geologic and seismic data and to revise the earthquake fault zones or to delineate new zones based on new information. The DoN requires geotechnical investigations to be performed as part of the design and retrofit of structures. Construction plans are reviewed for conformance with provisions of the Alquist-Priolo Act. The California Code of Regulations (24 California Code of Regulations Part 2), also known as the California Building Code, contains the enforceable state building standards. While NAWSCL is not subject to these standards, the Installation voluntarily complies with state and local building codes.

Under the Military Construction Act of 1979, NAWSCL received authority for geothermal projects on acquired lands (DoN fee-owned lands). An MOU between the Secretary of the Navy and the Secretary of the Interior allows BLM to lease certain DoN-controlled lands within the Coso KGRA for commercial geothermal development, if compatible with the NAWSCL mission. DoN constraints on geothermal operations were incorporated by an amendment in 1980. Historically, the DoN has acted as the lead agency in developing environmental documentation for geothermal development projects on DoN-controlled lands within the Coso KGRA. In March 1979, the DoN completed the final EIS for the Navy Coso Geothermal Development Program to evaluate the potential impacts of geothermal development. The first successful production well was completed in December 1981. The first power-generating unit was brought on-line in 1987, and the last unit was brought on-line in January 1990. Presently, there are four geothermal power plants, with nine 30-megawatt turbine-generator sets located within the Coso KGRA.

3.6.3 Physiography

This section describes the physical features of NAWSCL and its surrounding areas, including mountain ranges, drainages, and washes. NAWSCL lies within two physiographic provinces: the Basin and Range, and the Mojave Desert. The Basin and Range Province extends from Oregon to Utah; through Nevada, southern Arizona, and southern New Mexico; to the state of Sonora Mexico. The Province includes the highest and lowest elevations in the lower 48 states (Mount Whitney at 14,480 feet [4,416 meters] AMSL and Badwater in Death Valley at -280 feet [-86 meters] AMSL, respectively). Topography within the Basin and Range Province is the result of extension and thinning of the lithosphere, which is composed of the crust and upper mantle of the Earth. Extensional environments like the Basin and Range Province are characterized by faults that level off with depth.

The Mojave Desert Province includes part of Nevada, southern Arizona, and New Mexico, and reaches into Mexico. California's Mojave Desert, which is part of the larger Sonoran Desert, represents a transition zone between the two physiographic provinces (Lobeck 1975). Topography within the Mojave Desert

Province is dominated by isolated mountain ranges separated by expanses of desert plains. It has an interior enclosed drainage and many playas. There are two important fault trends that control topography: a prominent northwest/southeast trend and a secondary east/west trend.

3.6.3.1 North Range

The North Range is located within the Basin and Range Province and includes parts of the Coso and Argus ranges (Figure 3.6-1). The Coso Range is a northwest-trending mountain range that dominates the northwest quadrant of the North Range. The Coso Range extends from Owens Lake in the north (elevation 3,557 feet [1,084 meters] AMSL) to IWV. Coso Peak (elevation 8,160 feet [2,487 meters] AMSL) is the highest point within the Coso Range. Within the boundaries of the North Range surrounding Coso Peak are several small basins, including Upper Cactus Flat, Upper Centennial Flat, and Coles Flat. The Argus Range is a north-trending mountain range that dominates the eastern portion of the North Range. The highest point within the Argus Range is Maturango Peak, at 8,839 feet (2,694 meters) AMSL. To the west of Maturango Peak are Darwin Wash and Etcheron Valley.

South of the Coso Range is IWV, which covers most of the southwest quadrant of the North Range and extends south beyond the boundaries of the North Range. The Sierra Nevada is the most prominent mountain range in the region, and it has an important effect on climate and runoff.

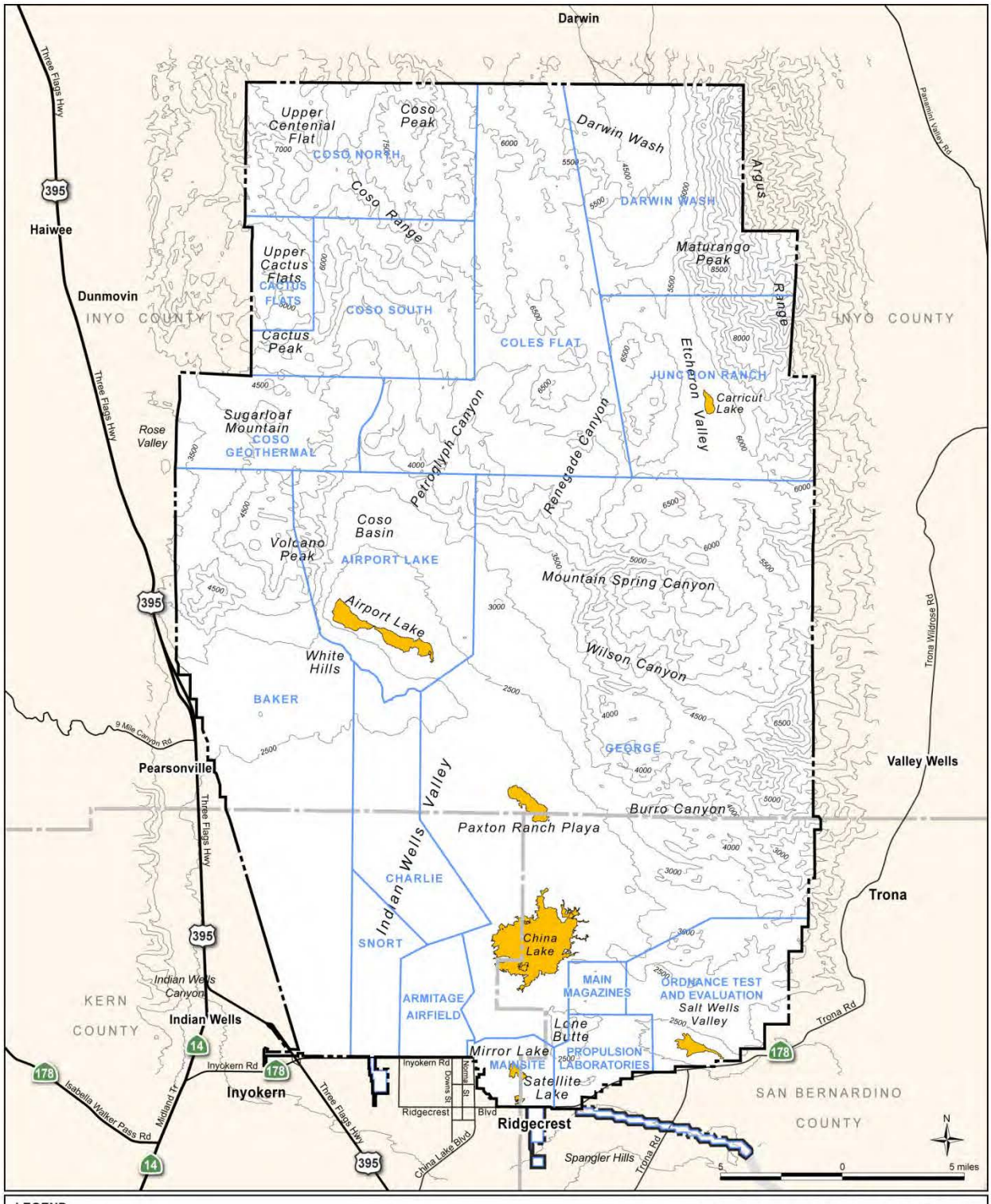
The Sierra Nevada rises higher than 9,000 feet [2,744 meters] AMSL, compared to peak elevations in Coso Range that average about 6,500 feet (1,982 meters) AMSL. The Sierra Nevada captures most of the moisture carried inland from the Pacific Ocean, making these mountains a more significant source of runoff and sediment to the IWV than the smaller ranges farther east. Lack of rainfall and runoff east of the Sierra Nevada is responsible for the desert landscape features that characterize the NAWSCL region. These features include the following:

- Large alluvial fans that extend from the mouths of the canyons and fill the basins;
- Shallow, intermittent stream channels or washes that occasionally carry flash floods onto the valley floor from intense storms at higher elevations;
- Jagged rock outcrops; and
- Dry, terminal playa lakes that accumulate mineral salts and fine sediments as evaporation rates exceed the rate of inflow from runoff.

In the northern portion of IWV, the washes from Sand Canyon and Noname Canyon merge near the boundary of the North Range and the Inyo/Kern County line. North of the Kern County line, the principal inflow to the northern end of IWV comes from Rose Valley. South of Little Lake, this drainage follows a narrow course between the steep granite outcrop of the Sierra Nevada and Quaternary lava flow deposits from volcanic vents associated with the southern Coso Range.

The southern rim of IWV is formed by the El Paso Mountains, Rademacher Hills, and the Spangler Hills. Near the southern end of the valley, several washes that drain Sierra Nevada canyons and the El Paso Mountains converge to form Little Dixie Wash. The wash continues onto the North Range east of Inyokern, and terminates in Charlie Range LMU.

At the southern end of IWV, several small washes originate in the El Paso Mountains and converge near the city of Ridgecrest to form South El Paso Wash. This wash drains across the Armitage Airfield LMU and terminates in the George Range LMU, near the China Lake playa. Occasionally, El Paso Wash and Bowman Wash cause flooding in the North Range. At the northern end of IWV is the Coso Basin. A



LEGEND
- 500-Ft Contour
- Land Management Unit
- Installation Boundary
- Highway/Road
- County Boundary

CHINALAKEEIS/033

Topography, North Range

Figure 3.6-1

number of washes drain from the Coso Range into the Coso Basin, between Cactus Peak and Wild Horse Mesa.

The drainages within IWV generally converge on the China Lake playa. However, only runoff from large storms reaches the playa. Most of the runoff evaporates or seeps into the alluvium before it reaches the playa. The elevation of the bed of China Lake is approximately 2,150 feet (655 meters) AMSL. South of China Lake playa are Mirror and Satellite playa lakes, which are located in the Mainsite LMU. Between China Lake playa and Searles Valley is Salt Wells Valley, which lies in the southeastern corner of the North Range. The lowest elevation on the North Range is on the eastern edge of Salt Wells Valley, where the land slopes down to about 1,900 feet (579 meters) AMSL. Salt Wells Valley drains east toward Searles Valley.

3.6.3.2 South Range

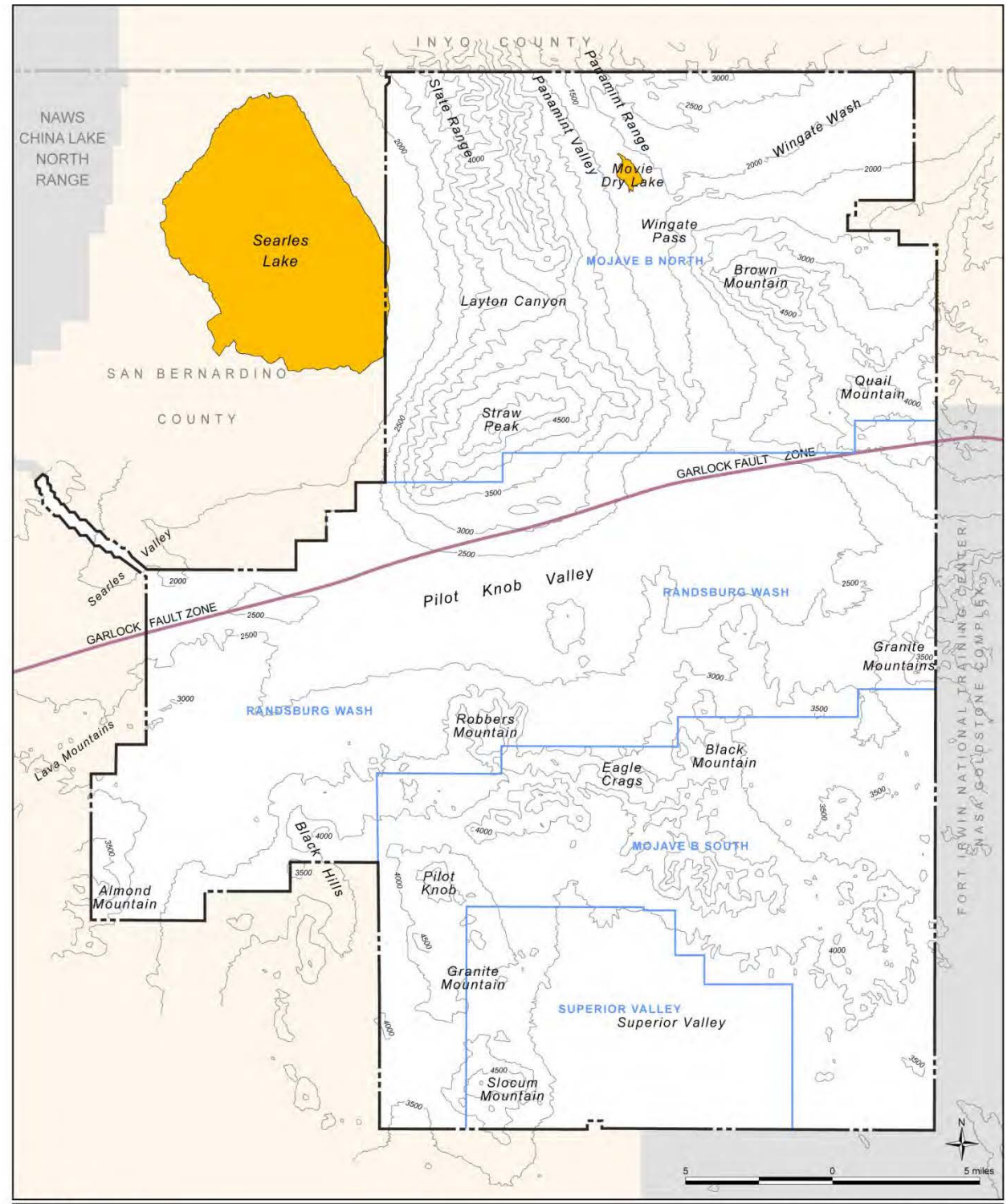
Figure 3.6-2 shows the topography of the South Range. The northern half of this range (north of Garlock Fault) is in the Basin and Range physiographic province. The southern half, which includes most of Randsburg Wash and all the Mojave B South Range, is in the Mojave Desert physiographic province.

The South Range borders Searles Valley, extending along the west flank of Slate Mountain Range and a low topographic divide between Straw Peak (the highest point in Slate Range at 5,578 feet [1,701 meters] AMSL) and Almond Mountain. Panamint Valley, which flanks the northern half of Argus Range, extends into the South Range along a southeast trend east of Slate Range. East of Panamint Valley is Panamint Mountain Range, which ends at the northern boundary of the South Range. Panamint Range separates Panamint Valley from Death Valley to the east. South of Panamint Range, Wingate Wash follows the trend of Long Valley into Death Valley. South of Long Valley is Brown Mountain, which is part of the northwest-trending Quail Mountains. The Owlshead Mountains extend on a northeast trend beyond the eastern boundary of the South Range.

The southern boundary of the South Range crosses Superior Valley. The rim of Superior Valley is formed by a cluster of low peaks within the South Range, including Pilot Knob (5,428 feet [1,654 meters] AMSL) and Eagle Crags (about 5,000 feet [1,524 meters] AMSL) to the north, and Granite Mountain (about 4,800 feet [1,463 meters] AMSL) and Slocum Mountain (5,124 feet [1,562 meters] AMSL) to the west. Most of Pilot Knob Valley drains north to Panamint Valley through a gap between Slate Range and the Quail Mountains at an elevation of about 2,200 feet (671 meters) AMSL. However, the western extremity of the South Range drains northwest into Searles Valley through a low point in the ridge between Straw Peak and Almond Mountain.

3.6.4 Soils

Soil resources are a subset of geologic resources. Soils are the thin, typically biologically active layer of sediments covering the Earth's surface, from which most plants and many animals derive moisture and nutrients. Soils are normally formed in place from the weathering of rock material, although soils may be formed elsewhere and transported by erosion or human activities. Traditionally, soils are classified with respect to the characteristics that affect plant growth (moisture retention capacity, drainage, depth, and organic matter content). Since soils are located at the Earth's surface, their engineering characteristics, such as stability on slopes, compaction, and shrink/swell potential, are also important. Soils grade with depth to the parent rock material from which they are derived, so the difference between soil and non-soil deposits is not necessarily distinct. The term "soil" often is used to describe any unconsolidated deposits found near the Earth's surface, which is the definition used for this document.



Topography, South Range

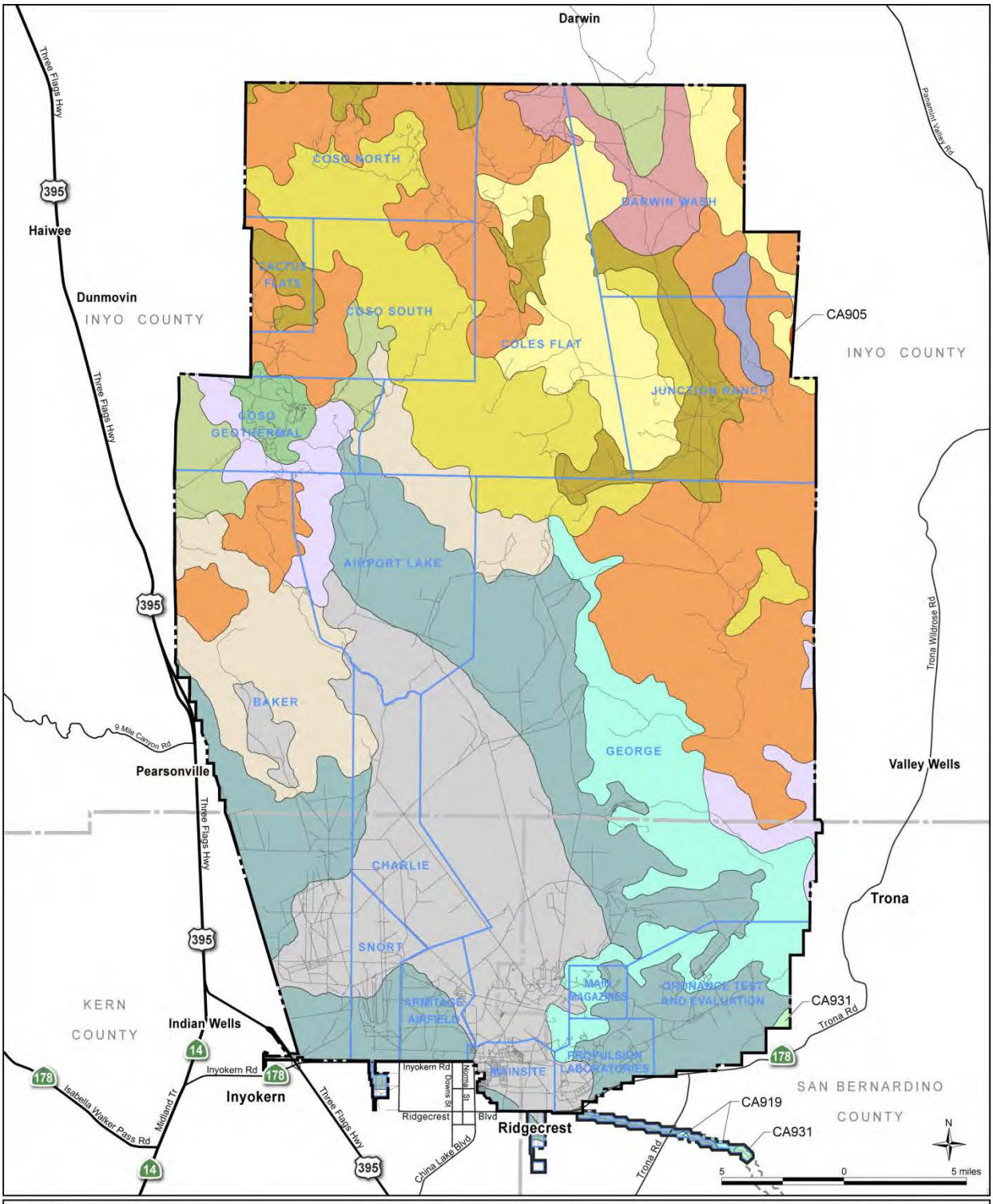
Figure 3.6-2

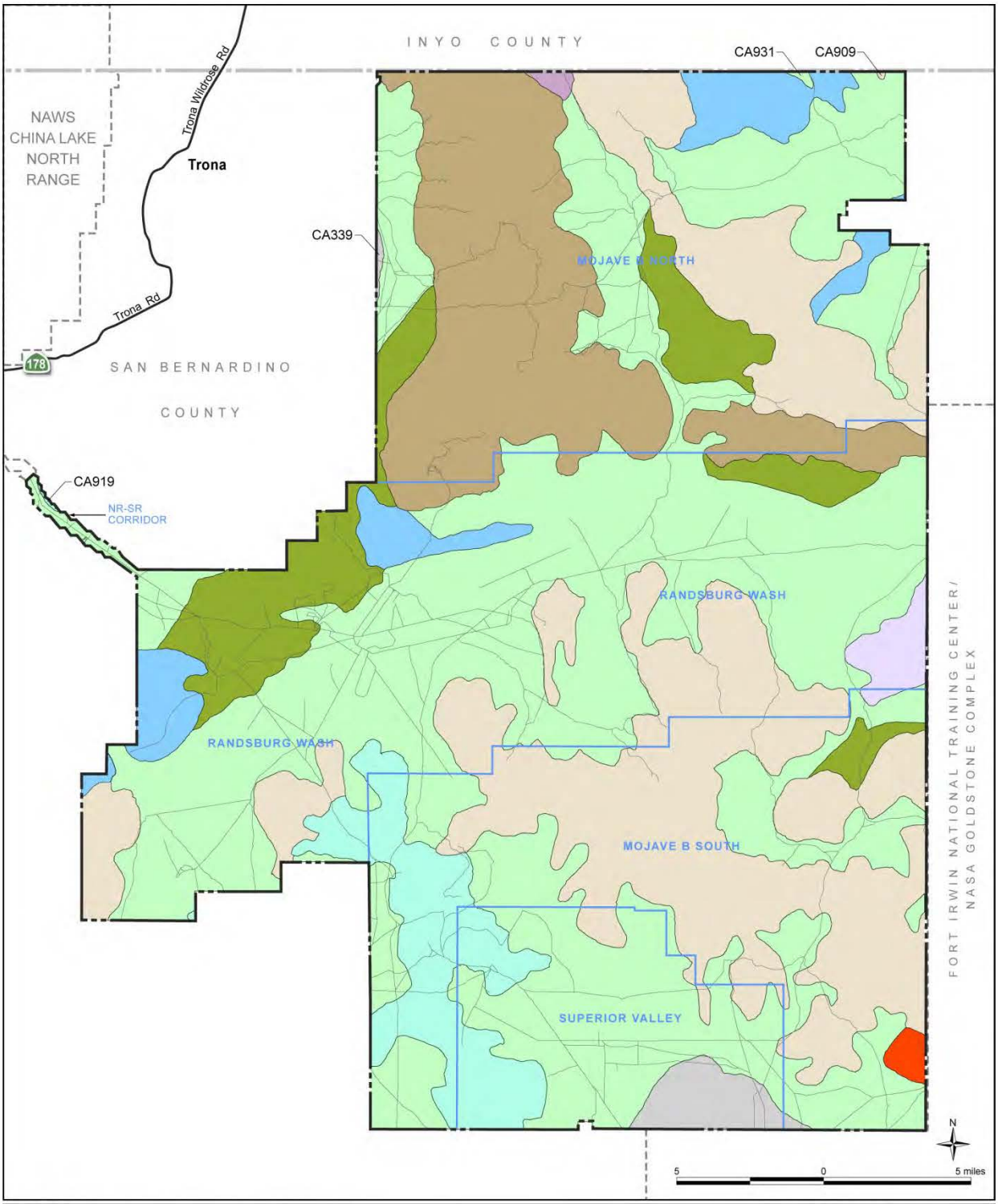
The State Soil Geographic database, which was established by the U.S. Natural Resources Conservation Service, formerly the Soil Conservation Service, identifies 14 soil associations that occur within the North Range and 11 soil associations within the South Range (Figures 3.6-3 and 3.6-4). Table 3.6-1 provides summary descriptions for each soil unit.

The California Building Code, or 24 California Code of Regulations Part 2, contains the official state building standards. The California Building Code § 1629A.2 requires structures to have sufficient ductility and strength to undergo the displacement caused by "upper-bound earthquake" motion without collapse. The upper-bound earthquake ground motion is defined as the motion having a 10 percent probability of being exceeded in a 100-year period, or a maximum level of motion that may ever be expected at the building site within the known geological framework. Although DoN construction projects are not subject to California's building standards as a formal matter, DoN construction requirements are in full substantive compliance with the California Building Code (U.S. Navy 2005a).

Seismic (earthquake) hazards are caused by intense ground shaking, which is typically associated with movements along breaks (faults) in the Earth's crust. Geologists have observed that earthquakes are more likely to occur on or near an existing fault than in an area not previously faulted. Moreover, earthquakes also occur more frequently on relatively young faults than on very old faults. The Quaternary Period (the last 1.6 million years) is typically used as a cutoff for determining earthquake probability, because faults inactive throughout this period are extremely unlikely to be active again soon. Major fault zones active within the Quaternary Period and within 50 miles (80 kilometers) of NAWSCL include the following:

- Wilson Canyon Fault Zone, approximately 5 miles (8 kilometers) to the northeast of the Weapons Survivability Lab in the North Range;
- Sierra Nevada Fault Zone, immediately adjacent to the western boundary of the North Range;
- Owens Valley Fault Zone, along the same trend as the Sierra Nevada Fault Zone and within 10 miles (16 kilometers) of the northwest corner of the North Range;
- Garlock Fault Zone traverses the South Range and lies within about 11 miles (18 kilometers) of the southern boundary of the North Range;
- Panamint Valley Fault Zone extends onto the northern portion of the South Range; and
- Furnace Creek and Death Valley Fault Zones, about 15 miles (24 kilometers) northeast of the South Range (Figure 3.6-5).
- A number of other, smaller Quaternary or younger faults occur in the immediate vicinity of the North Range. A large earthquake on one of these faults could cause damaging seismic shaking within the boundaries of NAWSCL (U.S. Navy 2005a).
- The primary seismic hazard at the North Range (southern China Lake playa area) is liquefaction. Liquefaction occurs when ground shaking causes a temporary increase in pore pressure in water-saturated silts and sands, resulting in a sudden loss of shear strength. Liquefaction of near-surface soils can cause foundations to settle, roadways to buckle, and hillsides to fail. For example, during and after an earthquake on October 1, 1982, minor wall cracking, door jamming, and similar problems in several structures were attributed to liquefaction-induced foundation settlement (U.S. Navy 2005a).
- The southern portion of the North Range has been evaluated for liquefaction potential. Gentle slopes underlain by highly liquefaction-susceptible sediments occur within limited areas of NAWSCL, especially in and around the China Lake playa area. Facilities within the Aircraft Survivability Complex area of George Range would be moderately susceptible to liquefaction (U.S. Navy 2005a).


Darwin
Three Flags Hwy
Panamint Valley Rd
COSO NORTH
DARWIN WASH
CACTUS FLATS
COSO SOUTH
COLES FLAT
JUNCTION RANCH
COSO GEOTHERMAL
AIRPORT LAKE
BAKER
GEORGE
CHARLIE
SNORT
ARMITAGE AIRFIELD
MAIN MAGAZINES
ORDNANCE TEST AND EVALUATION
PROPULSION LABORATORIES
MAINSITE
CA905
CA931
CA919
INYO COUNTY
KERN COUNTY
SAN BERNARDINO COUNTY
Haiwee
Dunmovin
Pearsonville
Indian Wells
Inyokern
Ridgecrest
Valley Wells
Trona
Trona Wildrose Rd
9 Mile Canyon Rd
Isabella Walker Pass Rd
Midland Tr
Inyokern Rd
Downs St
Ridgecrest Blvd
China Lake Blvd
Trona Rd
395
14
178
N
5
0
5 miles
LEGEND
CA339
CA635
CA738
CA739
CA740
CA750
CA751
CA760
CA761
CA788
CA905
CA909
CA913
CA919
CA931
Land Management Unit
Installation Boundary
Highway/Road
County Boundary
CHINALAKEEIS/035
Soil Classifications
North Range
Figure 3.6-3



Soil Classifications
South Range

Figure 3.6-4

Table 3.6-1
Selected Soil Characteristics
(Page 1 of 2)

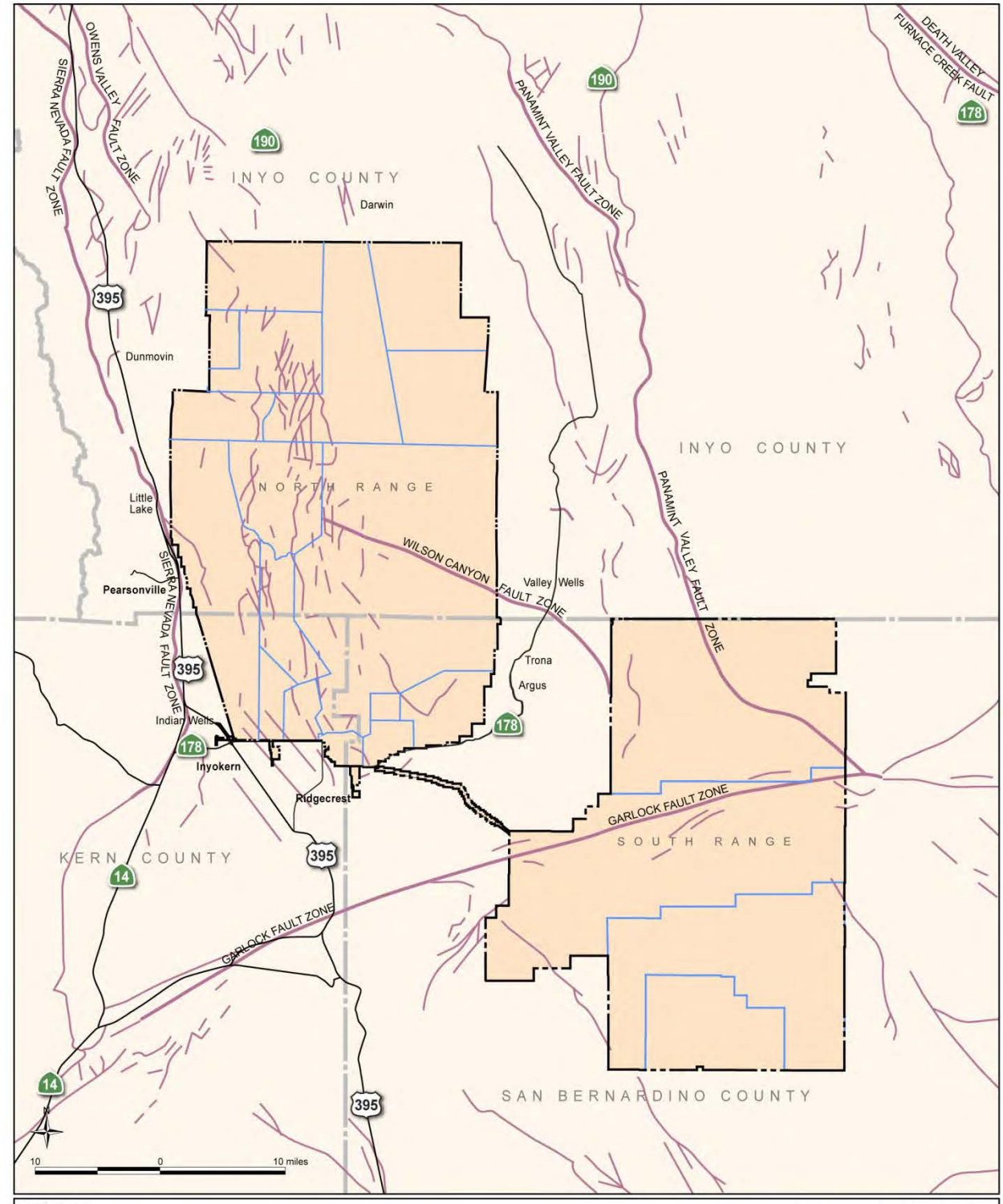
Identification Number	State Soil Geographic (STATSGO) Database Name and Location
CA339	Rosamond, Rosamond Variant, Playas. Found on basin floors and playas in the North and South Ranges. Deep, well drained soils that formed in material weathered mainly from granitic alluvium. Found on the lower margin of the alluvial fans between the sloping fans and the playas and have slopes of 0 to 2 percent. Wind erodibility* is 3.
CA635	Cajon, Wasco, Rosamond. Found on alluvial plains in the North Range. Very deep, somewhat excessively drained soils that formed in sandy alluvium from dominantly granitic rocks. Found on alluvial fans, fan aprons, fan skirts, inset fans and river terraces. Slopes are 0 to 15 percent. Wind erodibility* is 2.
CA738	Mexispring, Rock Outcrop, Ferroburro. Found associated with granitic outcrops in the North Range. Very shallow and shallow, somewhat excessively drained soils that formed in colluvium and residuum derived from granitic rocks. Found on hills and mountains. Slopes are 15 to 85 percent. Wind erodibility* is 6.
CA739	Upspring, Blacktop, Rock Outcrop. Found on the northeast side of Rose Valley. Very shallow and shallow, somewhat excessively drained soils formed in material weathered from extrusive basic igneous rocks and some pyroclastic material. Found on hills, mountains, and plateaus and have slopes of 8 to 75 percent. Wind erodibility* is 8.
CA740	Arizo, Yellowrock, Riverwash. Found in Darwin Wash on the North Range. Very deep, excessively drained soils that formed in mixed alluvium. Found on recent alluvial fans, inset fans, fan apron, fan skirts, stream terraces, floodplains of intermittent streams and channels. Slope ranges from 0 to 15 percent. Wind erodibility* is 3.
CA742	Bunkerhill, Salt Flats, Dune Land. Found in Panamint Valley near northern boundary of the South Range. Somewhat poorly drained soils formed in mixed lacustrine materials. Found on basin rim positions and have slopes of 0 to 2 percent. Wind erodibility* is 2.
CA750	Theriot, Rock Outcrop, Uhaldi. Found in upland areas of the North and South Ranges. Moderately deep, well drained soils that formed in residuum and colluvium derived from tuffaceous sedimentary rocks. Found on rock pediments, plateaus, and hills. Slopes are 4 to 50 percent. Wind erodibility* is 6.
CA751	Rubble Land, Clanalpine Family, Bregar. Found only in Maturango Peak area of the North Range. Very shallow and shallow, well drained soils that formed in residuum and colluvium derived from andesite, tuff, and quartzite. Found on plateaus, hills, and mountains. Slopes are 2 to 75 percent. Wind erodibility* is 8.
CA760	Cartago, Yermo, Tinemaha. Found in upland flats and low hills in the North Range, including Darwin Hills, west side of Rose Valley, and canyons northeast of Coso Hot Springs. Very deep, somewhat excessively drained soils formed in granitic alluvium and in some small areas mixed alluvium. Found on alluvial fans, fan terraces, and edges of valley floors and have slopes of 0 to 30 percent. Wind erodibility* is 2.
CA761	Ulymeyer, Rovana, Bairs. Found in Etcheron Valley and Upper Cactus Flat on the North Range. Very deep, somewhat excessively drained soils that formed in alluvium derived from granitic rock. Found on alluvial fans and fan terraces. Slopes are 5 to 15 percent. Wind erodibility* is 2.
CA788	Blacktop, Downeyville, Rock Outcrop. Found along central granitic ridges of Coso Range in the North Range. Very shallow and shallow, well drained soils that formed in residuum and colluvium derived from volcanic rocks. Found on hills, mountains, rock pediments, plateaus, and mesas. Slopes are 4 to 75 percent. Wind erodibility* is 6.

Table 3.6-1
Selected Soil Characteristics
(Page 2 of 2)

Identification Number	State Soil Geographic (STATSGO) Database Name and Location
CA905	Rock Outcrop, St. Thomas, Tecopa. Found in small region near Goldstone Lake in the southeast corner of the South Range. Very shallow, well-drained soils that form from carbonate parent materials. Medium to rapid runoff and moderately high permeability. Wind erodibility* is 7.
CA907	Rock Outcrop, Tecopa, Lithic Torriorthents. Found over most of Slate Range in the northern portion of the South Range. Very shallow soils formed in residuum and colluvium weathered from quartzite, schists, and gneiss. Tecopa soils are on low hills and low mountain side slopes with a gradient of 15 to 75 percent. Wind erodibility* information is unavailable due to insufficient data.
CA909	Rock Outcrop, Upspring, Sparkhule. Found over most of the Tertiary volcanic peaks in the South Range. Shallow soil to rock, well drained soils that formed in residuum from volcanic or granitic rocks. Sparkhule soils are on rock pediments and hills and have slopes of 5 to 50 percent. Wind erodibility* is 7.
CA910	Badland, Bitterwater, Cajon. Found on south margin of Straw Peak, north margin of Lava Mountains, and the southeast foothills of Panamint Range, all within the South Range. Very deep, somewhat excessively drained soils that formed in sandy alluvium from dominantly granitic rocks. Found on alluvial fans, fan aprons, fan skirts, inset fans and river terraces. Slopes are 0 to 15 percent. Wind erodibility* is 4.
CA913	Rock Outcrop, Lithic Torriorthents, Calvista. Found on southwest slope of Argus Range and in Rose Valley on the North Range, and on the western slope of the Granite Mountains in the South Range. Shallow, well drained soils that formed in material from granitic rock that has seams of calcite. Found on mountains ridges on slopes of 2 to 30 percent slopes. Wind erodibility* is 8.
CA919	Calvista, Rock Outcrop, Trigger. Found on the margins of Salt Wells Valley in the North Range and on the western margin of Superior Valley in the South Range. Shallow, well drained soils that formed in material from granitic rock that has seams of calcite. Found on mountains ridges on slopes of 2 to 30 percent slopes. Wind erodibility* is 3.
CA930	Nickel, Arizo, Bitter. Found on southeastern margin of Searles Valley and on scattered locations in the South Range. Deep, well drained soils that formed in alluvium from mixed rock sources. Nickel soils are on fan remnants. Slope ranges from 0 to 35 percent. Wind erodibility* is 8.
CA931	Cajon, Arizo, Victorville Variant. Found on the South Range. Deep, moderately well drained soils that formed in mixed alluvium, dominantly from granitic sources. Victorville soils are on low river terraces and flood plains and have slopes of 0 to 2 percent. Wind erodibility* is 5.

Note:
* Note: Wind erodibility ranges from 1 to 8, with 1 being highly erodible and 8 having low erodibility. (Erodibility data have been derived for all soil complexes from NRCS wind erodibility factor data available at www.ca.nrcs.usda.gov.

Sources: NRCS 1991, 1998; SCS 1989.


SIERRA NEVADA FAULT ZONE
OWENS VALLEY FAULT ZONE
INYO COUNTY
Darwin
190
PANAMINT VALLEY FAULT ZONE
DEATH VALLEY FURNACE CREEK FAULT
178
395
Dunmovin
NORTH RANGE
Little Lake
WILSON CANYON FAULT ZONE
Valley Wells
Pearsonville
Trona
Argus
Indian Wells
Inyokern
Ridgecrest
GARLOCK FAULT ZONE
SOUTH RANGE
KERN COUNTY
14
SAN BERNARDINO COUNTY
10 0 10 miles
LEGEND
Fault
Installation Boundary
CHINALAKEEIS080
Tectonic Map of NAWSCL and Vicinity
Figure 3.6-5

3.6.5 Seismicity and Seismic Hazards

Under California Public Resources Code § 2622 (the Alquist-Priolo Earthquake Fault Zoning Act of 1972), the California Division of Mines and Geology has delineated seismic zones deemed to be "sufficiently active and well defined as to constitute a potential hazard to structures from surface faulting or fault creep." The state geologist is required to continually review new geologic and seismic data and revise earthquake fault zones, or to delineate new zones based on new information. The DoN requires geotechnical investigations to be performed as part of the design and retrofit of structures. Construction plans are reviewed for conformance with provisions of the Alquist-Priolo Act.

3.6.6 Minerals Exploration

Minerals exploration (mining) has been conducted on what is now NAWSCL since 1860. Portions of NAWSCL have been withdrawn from all forms of appropriation under the public land laws, (including the mining laws and the mineral leasing laws) since 1947, and under the current NAWSCL boundary, since October 31, 1994, the date of the CDPA.

The Engle Act requires consideration of the impacts from land withdrawals on potential mineral resources. The BLM prepared a Minerals Potential Report in support of the then-proposed NAWSCL land withdrawal renewal (BLM 2013). This report was prepared from existing information on known mineral properties as well as published reports of mines maintained by the state of California and the U.S. Geological Survey.

The report identified 148 historic mines and prospects for various commodities (primarily for gold) within the North Range, and 58 mines and prospects within the South Range. Most of the North and South Ranges are underlain by alluvial material in which little or no activity except localized placer gold operations was noted in any record. Granitic intrusive rocks, and metasedimentary and metavolcanic rocks predominate as hosts for gold and polymetallic mineralization.

An active magmatic hot spot in the west central portion of the North Range (Coso Hot Springs area) is a source area for volcanism, with hot spring hydrothermal and thermal groundwater features (fumaroles and hot springs), and thermal groundwater as the source for geothermal development. Section 3.6.7 has a detailed discussion regarding geothermal development on NAWSCL.

Pursuant to the BLM's mineral classification guidelines, the North Range is classified as having a high potential for the occurrence and accumulation of lode gold and placer gold deposits, silver and base metal (dominantly lead) deposits, tungsten deposits, and geothermal resources. In addition, the North Range is classified as having a moderate potential for uranium and rare earth deposits.

The northern portion and far southeastern corner of the South Range is classified as having a high potential for the occurrence and accumulation of lode gold and placer gold deposits, and silver and base metal (dominantly lead) deposits. In addition, the South Range is classified as having a moderate potential for tungsten and rare earth deposits.

While the potential exists for the occurrence and development of mineral deposits on NAWSCL, only two mineral deposit models were identified as having a high potential for development. These included quartz-gold vein and shear systems within Mesozoic through mid-Tertiary granitic intrusive and older metamorphic rocks, and associated placer gold deposits.

Other mineral resources such as bulk disseminated gold, mercury, iron, silver and base metal (primarily copper and lead) deposits are known to have been mined or known to have occurred on NAWSCL. Some areas of NAWSCL where known deposits, favorable geological environments, and or geochemical anomalies are present support a high and or moderate potential for the occurrence and accumulation of these resources. However, because of legal, infrastructure, market, operational, security/safety, and environmental constraints, these deposits have a low potential for development, despite market pricing.

There has been no sustained commercial uranium mining within the California desert. Known deposits do exist; however, they have never been developed beyond the exploration phase and were considered low grade. A prominent uranium deposit is situated approximately 3 miles west of the northwestern boundary of the North Range, and trends northerly along the west flank of the Coso Mountains for a distance of approximately 5 miles. Prospecting and exploration activity had been conducted at this deposit in the 1950s. Based on this deposit and the geologic environment, the North Range has been identified as having a moderate potential for the occurrence and accumulation of uranium deposits. The South Range is classified as having a low to non-existent potential for the accumulation and occurrence of uranium resources due to the lack of mineral occurrences and low anomalous uranium values in similar geologic environments (BLM 2013).

NAWSCL was determined to not be a viable source for solid leasable minerals, oil, gas, or coal resources. Common mineral materials such as pumice, perlite, cinder, sand and gravel, and building stone are known to exist within NAWSCL and are actively being produced from private and public land operations adjacent to the Installation. Adequate resources exist in deposit outside NAWSCL to meet market needs within the region. The BLM report recommended that a comprehensive survey of potential uranium deposits be made within the northern part of the North Range to determine if viable resources are present.

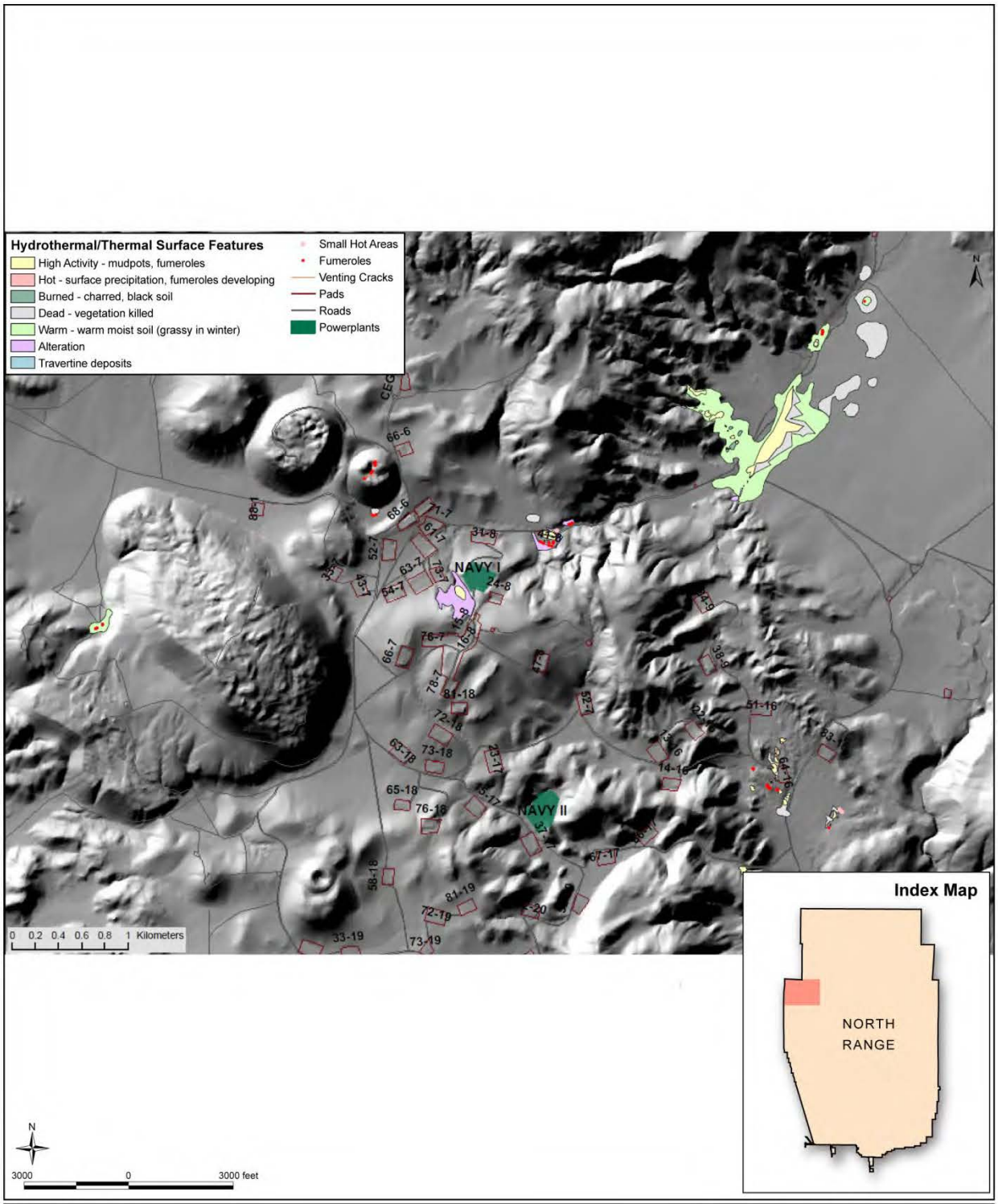
3.6.7 Thermal Activity in the Coso Range

The northwestern portion of NAWSCL occupies a large region of the Coso Mountain Range which consists primarily of granitic rocks, similar to the Sierra Nevada to the west, and a much younger accumulation of volcanic rocks. Volcanic rocks including ash flows, rhyolite domes and flows, basalt cinder cones and basalt flows form a thin blanket over portions of the Coso Range. Most of the volcanic activity began about 4 million years ago with the most recent activity occurring less than 10,000 years ago.

The Coso geothermal system is spatially and temporally associated with the volcanic field. Several episodes of hydrothermal activity are evident in the area. High-temperature siliceous sinters dated at 238,000 and 10,000 years old occur in the Wheeler mercury deposit area about 1.2 miles (2 kilometers) due south of the Coso Hot Springs, the largest surface hydrothermal manifestation in the Coso Range. Siliceous sinter tends to be deposited above hot to very hot thermal systems, including the tops of ancient ("paleo") hot spring deposits such as at Bodie, California.

Travertine deposits dated at 307,000 and 3,000 years old have also been mapped and examined in the Coso Range. Travertine is an accumulation of calcium carbonate ($CaCO_3$), which is deposited in warm to hot thermal pools such as those found at Bridgeport, California. Other undated, paleo-hot springs and mercury deposits occur within the Coso Range (Figure 3.6-6).

Fluid inclusions are static bubbles containing gas and liquid and found within many minerals. If the age of a mineral containing the inclusion can be determined, then the depositional environment of the mineral at that time can be inferred from the fluid inclusion. An evaluation of fluid inclusions from select alteration minerals in the Coso Range indicate older hydrothermal fluid temperatures ranged from 169°F to 676°F



Coso KGRA Hydrothermal/ Thermal Surface Features

Figure 3.6-6

(76°C to 328°C). The distribution of older travertine and sinter deposits in parts of the Coso Range where no apparent surface hydrothermal activity current exists suggests that the Coso geothermal system, like all other geothermal systems, is dynamic and has been heating, cooling and reheating over time. Locations where hydrothermal fluids have breached the earth's surface have also moved over the previous 307,000 years.

Tritium (^3H) is primarily a surface nuclear bomb blast marker element used by researchers to determine if young groundwater exists. The very low concentration of tritium (< 0.05 tritium units) found in the Coso geothermal system today demonstrates that infiltrating rain and snow from the past 50 years (i.e., primary period of most atomic bomb testing in the U.S.) does not play a significant part in the present geothermal hydrologic cycle at Coso (Adams et al., 2000).

3.6.7.1 Coso Geothermal Field

In the 1970s, through a program to identify areas in the United States with the potential to produce electrical-grade geothermal energy, the U.S. Geological Survey identified several areas in the western U.S. as KGRAs, Known Geothermal Resources Areas. One of these areas was the Coso KGRA (Figure 3.6-7).

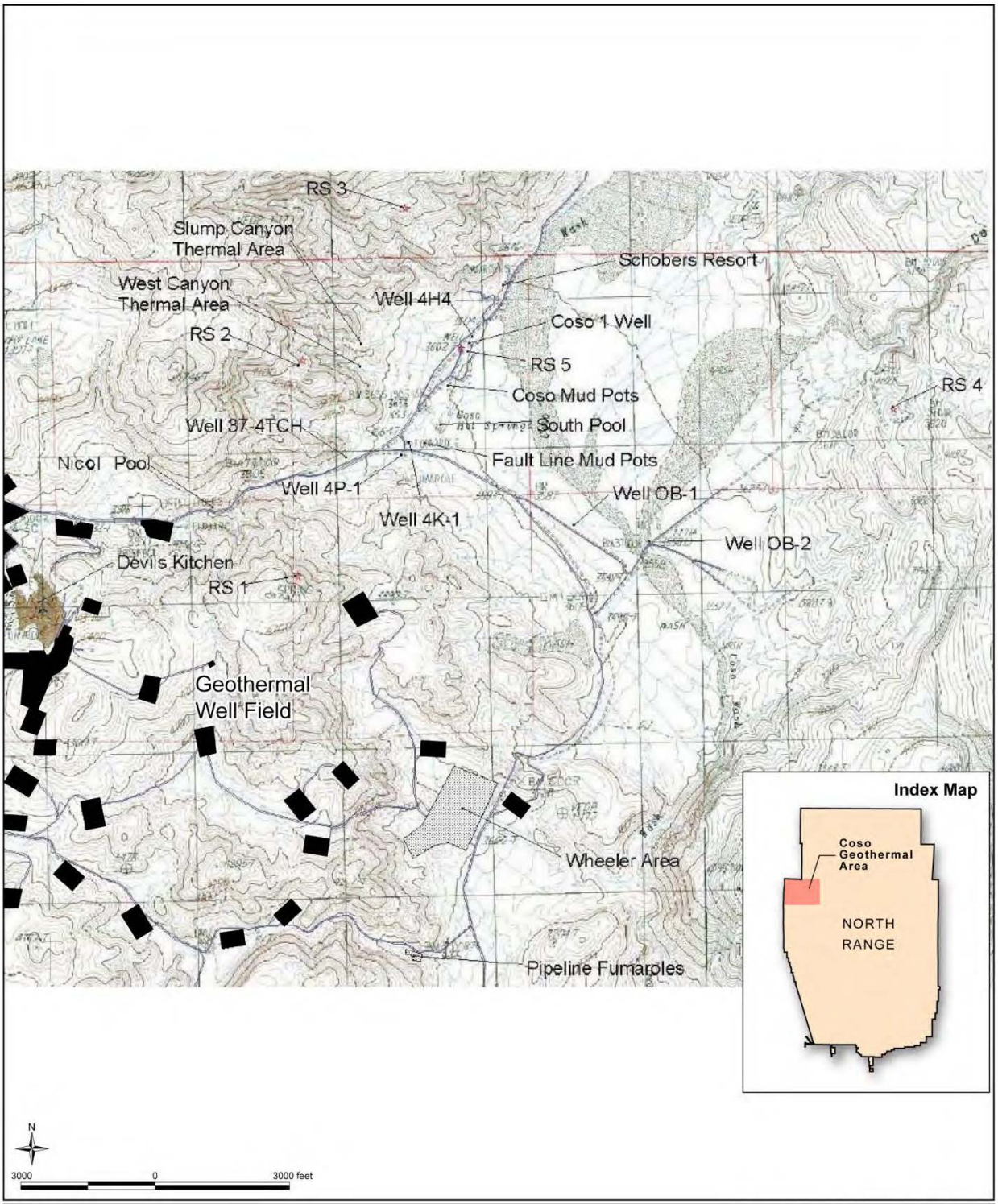
Today, the Coso geothermal energy development within the KGRA encompasses approximately 6,000 acres (2,428 hectares) in the northwestern portion of NAWSCL (Figure 3.6-8). Natural high-temperature steam from the Coso geothermal field has been extracted and used to produce electricity continuously since 1987.

While most hydrogeologists assume that the source of water in the Coso geothermal field is from the high Sierras to the west, all previous fluid isotope studies yield equivocal results. It has not yet been definitively determined where water in the Coso geothermal field comes from. The DoN monitors the physical and chemical conditions of the Coso Hot Springs to avoid or mitigate any potential adverse effects on the properties of the hot springs. A discussion of geothermal activity and investigations is provided below in Section 3.6.7.2.

3.6.7.2 Coso Hot Springs

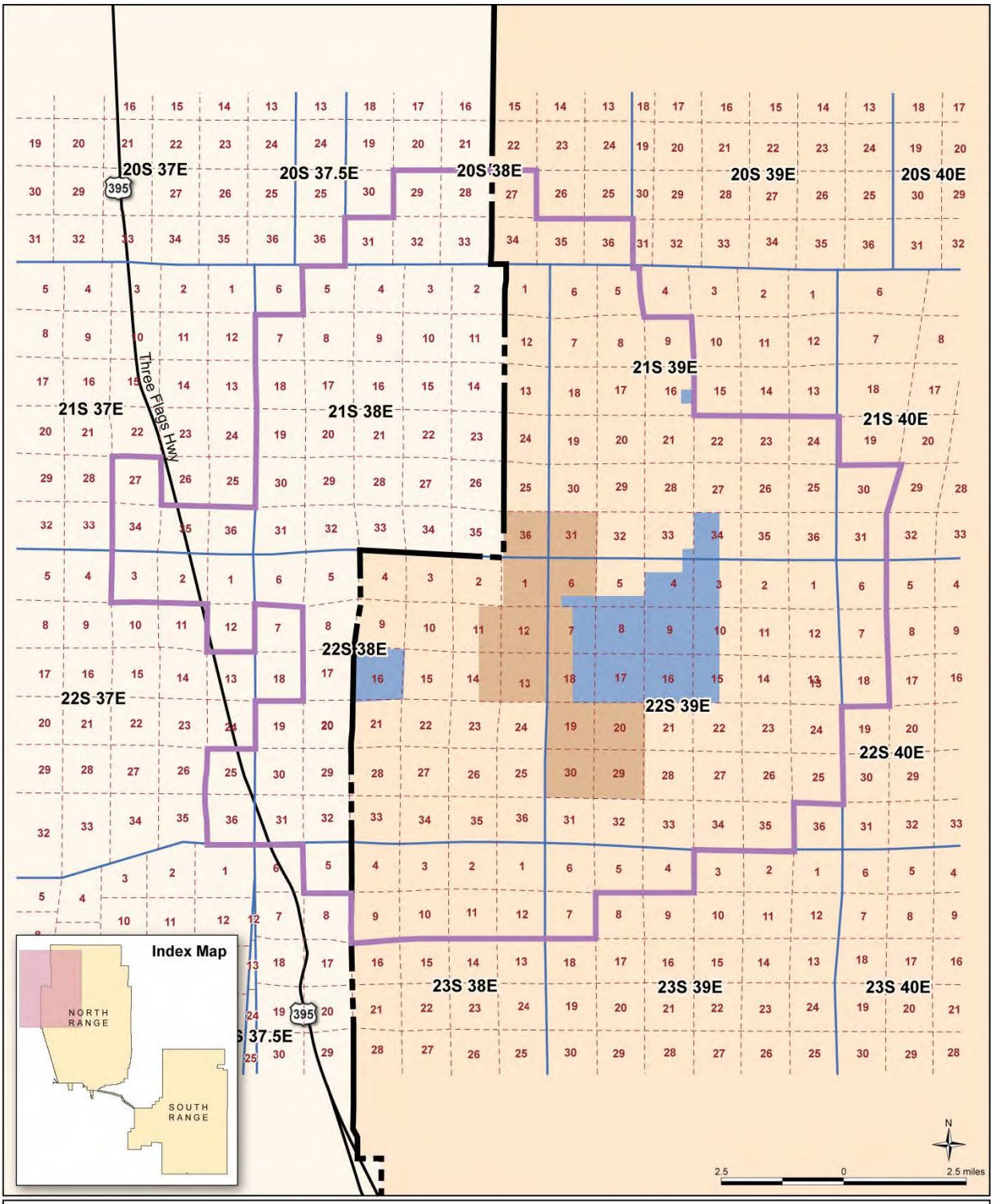
The Coso Hot Springs is a large area of hydrothermal alteration encompassing a young, ephemeral, collection of boiling mud pots, fumaroles, and steaming ground. Hydrothermal alteration is caused by the interaction of acidic geothermal steam and hot water with rocks and sediments, altering the minerals to clay and other alteration products. The dominant conduit for hot fluid transport is the Coso Wash fault, an active, northeast trending fault that creates the down-to-the-east drop in topography east of the Coso "resort" buildings. The mud pots and hot springs are largely fed by steam which condenses as it moves up along the east-dipping Coso Wash fault. As illustrated in Figure 3.6-6, distinct mud pots and fumaroles whose temperatures and fluid elevations have not been monitored, exist to the west of the Coso Wash fault and the primary hot spring features of the Coso Hot Springs area.

It has been demonstrated through years of geological investigations of active geothermal systems (Coso, Geysers, Salton geothermal fields) as well as ancient geothermal systems which now contain anomalous accumulations of precious metals (i.e., hydrothermal precious metal deposits) that the major conduits for hydrothermal fluid flow are faults. All currently producing geothermal fields and non-producing hot spring systems world-wide (e.g., Coso Hot Springs, Yellowstone National Park, Glenwood Springs, CO, Hot Creek, Surprise Springs and hundreds of others) are fed by faults. The subsurface "plumbing" linking one spring to another in a region tends to be very difficult to understand. Regional faults that pass through the Coso Range and the many other smaller faults that exist within the Coso Range, are related in that they



Coso Geothermal Area and Well Pads

Figure 3.6-7



Coso Known Geothermal Resource Area Contracts and Leases

Figure 3.6-8

accommodate and transfer energy from earthquakes. How faults might be connected and where will always be the focus of geologists locally and world-wide as hot spring systems and geothermal fields are efficiently and effectively examined and possibly exploited.

Geothermal Activity and Investigations

In 1978, in preparation to begin development of the electrical-power quality geothermal energy resource contained in a portion of the Coso geothermal system, the DoN initiated a program to establish baseline data from the Coso Hot Springs area. By establishing a baseline for phenomena such as select hot pool temperatures and water levels and then by regularly measuring and noting these conditions, the potential effects of geothermal development and exploitation on the culturally sensitive Coso Hot Springs area if any, whether demonstrated or postulated, could be monitored. In 1979, a formal Memorandum of Agreement (MOA) was executed by the DoN to document and monitor the physical and chemical conditions of the Coso Hot Spring Archeological District to avoid or mitigate any potential adverse effects on the properties of the hot springs. Monitoring includes both physical and chemical characteristics of surface thermal features, shallow monitoring wells, and rain gauges around Coso Hot Springs. Ongoing monitoring established a baseline of surface manifestations that helps to quantify changes that may occur in the Coso Hot Springs area.

The monitoring program historically has focused on Devils Kitchen and Coso Hot Springs, which are the two prominent areas of surface manifestations. Other surface thermal features and monitoring wells are monitored periodically, when fluid is present, or when new thermal features have appeared.

As a dynamic system, steam and water flow at Coso Hot Springs surface features vary each year. Devil's Kitchen, Pipeline Fumaroles, Slump Canyon, and Fault Line Pool have been dry since 2007, while other surface geothermal features within the area (e.g., West Canyon, the Wheeler area and South Pool) were observed to expand during the 2009-2010 monitoring period (see Figure 3.6-7) (Geologica 2011).

The Coso Geothermal Area (within the NAWSCL North Range) was characterized by the following observations (Geologica 2011):

- Fluid levels, steam flow, and fluid chemistry measurements in the surface manifestations and shallow monitoring wells continue to reflect both seasonal and long term variation in the hydrological system of the Coso Hot Springs area.
- Water levels in the South Pool (the most prominent hot mud pool in the area) vary seasonally, declining during warm dry months and rising during cooler winter months.
- Water elevation in the South Pool averaged 3,614 feet (AMSL) from October 1979 through October 1987, increased about 4 feet to an average elevation of about 3,618 feet (AMSL) through 2002, and has been declining slightly through 2010.
- Temperature monitoring records from the South Pool document erratic variation through 1988 with stepped increases in 1989, 1991 and 1993, leveling out at an average of 204 F through 2002. Pool temperatures in 2002 stepped back down to the 160 F to 180 F range through 2010.
- Water levels measured in monitoring wells show mixed results. Some wells (OB-1, OB-2, and Coso Well #1) indicate overall declines in water levels whereas in others (4P-1 and 37-4 TCH) water levels have risen and stabilized.
- As in previous periods, the fluids sampled in the Coso Hot Springs area during the 2009-2010 reporting period appear to be steam condensate related, steam-heated groundwater, brine influenced water, or some combination of fluid types.

- Most fluids appear to have retained the same basic chemical characteristics and fluid sources over the course of the monitoring program.
- Steam condensate-related waters include, Devil's Kitchen, West Canyon, Pipeline, and Slump Canyon, while the area's most prominent thermal feature (South Pool) shows some indications of possible brine influence as well.
- Fluids from wells OB-1 and OB-2 both appear to be brine influenced groundwater although OB-2 is significantly more (4x) dilute with a possible trace of steam.
- The monitoring wells 4K-1 (not sampled during 09-10) and 4P-1 produce neutral dilute sodium bicarbonate groundwater with possible minor geothermal fluid influences.
- Some waters (4P-1) show an increase in sulfate suggesting a greater influx of steam or alkali-rich waters.
- Wheeler Prospect is no longer primarily brine influenced and appears to be fed by a mix of brine, steam or steam condensate although without the gas-related low pH observed at other steam-heated features.
- Changes in chloride concentrations during the previous 2007-2009 monitoring periods at West Canyon, Wheeler Prospect, and 4P-1 have stabilized during the current monitoring period.
- Coso Hot Springs monitoring data on well temperatures, fluid chemistry, and surface manifestations document potentially cyclic thermal changes in the shallow outflow of the Coso geothermal system.
- Two decades of systematic temperature surveys in shallow monitoring wells record step/plateau variation in temperatures in shallow aquifers beyond the seasonal variations which appeared to dominate the records for the first 10 years of monitoring for surface manifestations and shallow wells.
- Increased temperatures, expanded thermal activity, and geochemical evidence of increasing steam influx have been relatively consistent since 1993.
- Monitoring reports since 1990 have noted the correlation between increased thermal activity along the Coso Hot Springs fault, declining water levels, boiling and temperature increases in Coso #1.
- Increased activity in surface manifestations around old wells in the resort area may be partially related to casing failures in the old wells resulting in increased steam input in the shallow subsurface.
- The reactivation of previously dormant thermal features and the expansion of steam-heated ground is direct evidence for increased thermal input to the shallow geothermal aquifer at Coso.
- Climate data from the monitoring network indicate that regional precipitation and cold water recharge to the shallow hydrothermal system are equivalent to previous recorded highs following a drought period that ended in 1991.
- Geochemical data, primarily from the South Pool, Wheeler area, and shallow monitoring wells indicate that changes in fluid chemistry appear to be the result of slightly increased steam or steam condensate input and/or decreased brine discharge in the shallow outflow of the Coso Hot Springs system. A shift in dissolution of host rock type, either through decreasing pH or increased temperature may be impacting fluid chemistry as well, as demonstrated by increased chloride in South Pool.

In addition to ongoing monitoring, a modeling study was conducted (ITSI 2007) to determine whether changes observed in the Coso Hot Springs might be associated with production from the Coso geothermal field (i.e., fluid extraction). Numerical models were developed and analyzed (ITSI 2007) to evaluate whether geothermal production at Coso could create and move steam up a fault and change the temperatures and fluid levels in nearby hot springs. This modeling indicated that geothermal production at Coso could have such effects, but did not effectively demonstrate that steam would migrate almost 2 kilometers (1.2 miles) to the Coso Hot Springs area (ITSI 2007).

These model runs (ITSI 2007) concluded that:

- "It is very likely that the Coso Hot Springs are connected at depth with the Coso geothermal field; therefore, geothermal production could have created the observed temperature and water level increases in the Coso Hot Springs South Pool."
- "The changes generated in the model runs were all localized, and did not replicate the changes observed in the Coso Hot Springs South Pool."
- "It is impossible to completely rule out [based on this modeling study] time-dependent changes observed at the Coso Hot Springs being due to natural variability associated with high Rayleigh number convection."
- "Because the South Pool is almost 2 kilometers away from the wells that are producing the fluids used in geothermal production, the site-specific models, as presently constructed, do not support the theory that geothermal production led to the observed South Pool changes."

Aside from the ITSI study, a number of other studies conducted since the late 1980s have looked at the Coso Hot Springs thermal area and/or the nearby deep geothermal reservoir in some manner, and the authors of the ITSI study drew upon a number of these other studies when conducting their modeling and analyses. Besides the annual Coso Hot Springs monitoring reports, below is a list of these other studies:

- Austin, C.F. and W.F. Durbin, 1985, Coso: Example of a Complex Geothermal Reservoir, NWC TP-6658;
- Eerkins, M. and B. Logren, 1989, Recent Changes in Surficial Hydrothermal Manifestations of Coso Hot Springs, Inyo county, California, USN Contract N68936-89-C-2604;
- Gorenson, C., 1994, Coso Hot Springs Hydrology, Letter report to the Eastern Sierran tribes;
- Yearsley, E., Copp, J., McCulloch, J., Berard, B., Bjornstad, S., Katzenstein, A., Meade, D., 1994, Coso Hot Springs Hydrology Report, CECI and USN GPO;
- Adams, M.C., 1994–2005, Geochemical Monitoring of the Coso Geothermal System, USN Contracts N68936-93-C-0036, N68936-97-C-0234, N68936-02-C-0206;
- Curry, William, 2004, Analysis of Causes of Hydrologic Changes at Coso Hot Springs, prepared for Eastern California Paiute and Shoshone Tribes; and
- Geologica, 2006 – Present, Geochemical Monitoring of the Coso Geothermal System, USN Contract N68936-07-C-0073.

Among the reports identified in this study, only the ITSI (2007) and Curry (2004) reports were initiated specifically to examine whether a connection exists between the Coso Hot Springs and the geothermal field to the south. Of these two reports, only the ITSI study systematically attempted to test a linkage between the Coso Hot Springs and the geothermal reservoir.

According to the DoN's Geothermal Program Office subject matter experts who have examined the Curry report (Sabin et al), the results in the report were based on the author's examination of select, existing data from the Hot Springs region (U.S. Navy 2004b). Based on the author's reading of these data and other observations, Curry (2004) arrived at a series of findings concerning the relationship between the Hot Springs and the geothermal field, including the following: "A logical cause of the observed changes (at Coso Hot Springs) … is ongoing change in fracture porosity and resulting heat and fluid flow. Although this could be due to regional geologic conditions that have nothing at all to do with geothermal development, observed changes in seismicity associated with exploration drilling and production of geothermal resources have a high likelihood of contributing to the observed changes recorded at Coso Hot Springs" (Curry 2004 at Findings Summary, Finding # 8). No new data were generated for purposes of the study, no fieldwork performed, and no tests conducted. In the opinion of the DoN's subject matter experts, the conclusions reached in the Curry report are subjective and do not faithfully represent hydrogeological features of the Hot Springs or the nearby geothermal system. Furthermore, the Geothermal Program Office's Assessment of the Curry study identified multiple fundamental flaws in Curry's discussion of seismicity as a potential causal factor for observed changes at Coso Hot Springs (U.S. Navy 2004b at pgs. 5-8).

By contrast, the ITSI study involved the construction of mathematical models designed explicitly to test a working hypothesis that a hydrogeological connection exists between the Coso Hot Springs and the geothermal field. The mechanics of this hypothesized connection are described in the report. Historical geothermal production data from the Coso geothermal field provided to ITSI by the DoN plus assumptions concerning other subsurface conditions were described in this report and form the foundation of the models. The algorithms used in these models and the accompanying calculations can be found in the ITSI study report, including in published literature referenced in the report. Results of the multiple model runs were described in ITSI (2007). The data incorporated and the results generated were rigorously constrained and are reproducible.

Therefore, although two reports were commissioned that purport to examine a possible linkage between the Coso Hot Springs and the geothermal field, the reports are demonstrably different in their approach and in the reliability of their conclusions. Only the ITSI study was scientifically rigorous and attempted to "test" whether a connection exists.

Accordingly, it is the opinion of the DoN's subject matter experts that the ITSI study was based on the best available science in terms of the methodologies utilized, and the application of those methodologies within the general state of scientific knowledge and theory at that time with respect to both geothermal systems generally and the Coso Hot Springs in particular. Moreover, it is their opinion that the ITSI study continues to represent the best available science with respect to geothermal systems and the Coso Hot Springs, and that there is no reason to believe a new study undertaken at this time would reasonably be expected to generate meaningfully different data and/or conclusions than those reached by the ITSI study.

The ITSI report determined that no definitive link could be found that identifies geothermal plant operations as the cause of the observed physical changes at Coso Hot Springs. The DoN continues its monitoring requirements and continues to conduct hydrologic studies, as appropriate. In addition to these studies and the *1979 Final Environmental Impact Statement for the Navy Coso Geothermal Development Program* (U.S. Navy 1979c) numerous other NEPA documents have been prepared for the geothermal activities.

This page intentionally left blank.

3.7 WATER QUALITY AND HYDROLOGY

This section describes the existing surface water and groundwater resources on NAWSCL lands, including the occurrence, quality, beneficial uses, and flood hazards associated with these resources. Surface water resources are described in terms of water features, drainage, flooding, and water quality. Groundwater resources are characterized by geologic features, aquifers, and groundwater quality. The quality of these waters (chemical and physical characteristics) determines their beneficial uses, and ultimately their suitability for use at NAWSCL. Activities associated with the scope of this environmental analysis are used to assess the potential impacts to the beneficial uses of water resources and the quality of these waters.

Other topics related to water resources are presented in the following sections:

- Biological Resources – Regarding wetland habitat (see Section 3.4);
- Utilities and Public Services – Characterizing water supply and wastewater treatment infrastructure (see Section 3.9); and
- Hazardous Materials and Wastes – Describing investigation and remediation activities related to surface water and groundwater (see Section 3.11).

3.7.1 Region of Influence

The ROI for water resources includes the watersheds and groundwater basins that are within the boundaries of NAWSCL. These watersheds represent natural boundaries for surface water features that are generally contained within the Installation boundaries. NAWSCL shares the groundwater basins and water-bearing strata in and adjacent to the IWV, Pilot Knob Valley, Salt Wells Valley, Darwin Wash, and Superior Valley.

3.7.2 Regulatory Framework

The following sections present a summary of the applicable laws, regulations, and management plans related to the protection and use of water resources at NAWSCL.

3.7.2.1 Federal Laws and Regulations

Federal Antidegradation Policy

The federal antidegradation policy has been in existence since 1968. This policy protects existing uses, water quality, and national water resources. It directs states to adopt a statewide policy that includes the following primary provisions:

- Existing instream uses and the water quality necessary to protect those uses shall be maintained and protected;
- Where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the state finds that allowing lower water quality is necessary for important local economic or social development; and
- Where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, water quality shall be maintained and protected.

Federal Water Pollution Control Act

The principal law that serves to protect the nation's waters is the Federal Water Pollution Control Act, which was originally enacted in 1948. This legislation, more commonly referred to as the Clean Water Act (CWA), underwent significant revision when Congress, in response to the public's growing concern of widespread water pollution, passed the Federal Water Pollution Control Act Amendments of 1972.

The 1972 legislation established two fundamental national goals: eliminate the discharge of pollutants into the nation's waters and achieve water quality that is both "fishable" and "swimmable." The 1972 amendments to the CWA also prohibited the discharge of any pollutant to "waters of the U.S." from any point source (e.g., a discharge pipe) unless the discharge was authorized by a National Pollutant Discharge Elimination System (NPDES) permit. However, non-point-source discharges (i.e., storm water or urban runoff) were not fully covered under the NPDES permit program until Congress amended the CWA in 1987.

In the 1987 CWA amendments, Congress directed USEPA to establish a permitting framework under the NPDES program to address storm water discharges associated with urban areas and certain industrial activities. USEPA subsequently developed a two-phased NPDES permitting program.

Although there are no waters of the U.S. within the bounds of NAWSCL that would be subjected to the CWA, the following sections of the CWA are important for controlling storm water pollution and avoiding water quality impacts to water bodies beyond the limits of NAWSCL (e.g., Searles Lake and the Armargosa River):

- Section 303(d) – Total Maximum Daily Loads (TMDLs)
- Section 402 – NPDES Program.

These sections are further described below.

Section 303(d) – Total Maximum Daily Loads

CWA Section 303(d) mandates that states, territories, and authorized tribes develop a list of segments of water that do not meet water quality standards, even after pollution control technology has been implemented for point sources of pollution. Regional Water Quality Control Boards (RWQCBs) are required to prepare the CWA Section 303(d) *List of Water Quality Limited Segments Requiring TMDLs* and submit it to the State Water Resources Control Board (SWRCB), who then submits it to USEPA for final approval.

RWQCBs are required by law to establish TMDLs. These are action plans designed to improve the quality of water resources. As part of the TMDL process, municipalities must examine their water quality problems and identify sources of pollutants to create specific actions designed to improve water quality.

Section 402 – NPDES Program

Section 402 of the CWA establishes the NPDES permit program to regulate the discharge of pollutants from point sources. The CWA defines point sources of water pollutants as "any discernible, confined, and discrete conveyance" that discharges or may discharge pollutants. These are sources from which wastewater is transmitted in some type of conveyance (pipe and channel) to a waterbody; they are classified as municipal or industrial. Municipal point sources consist primarily of domestic treated sewage and processed water, including municipal sewage treatment plant outfalls and storm water conveyance system outfalls.

Amendments to the CWA in 1987 further strengthened regulation of pollutants by establishing a two-phased framework for the regulation of storm water and other types of urban runoff. Under Phase I, USEPA published NPDES requirements for municipal and industrial storm water discharges. Although the municipal requirements do not apply to NAWSCL, facilities that discharge storm water associated with industrial activity are required to acquire industrial storm water NPDES permit coverage.

In California, USEPA has delegated administration of the NPDES permit program to the SWRCB and its RWQCBs. In turn, NPDES permits for discharges from construction, industrial, and municipal activities are governed by the state (described below under State Laws and Regulations).

The Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) (42 U.S.C. § 300f et seq.) of 1977 (P.L. 95-190) and the Safe Drinking Water Amendments of 1996 (P.L. 104-182) established contaminant limitations and enforcement procedures to protect drinking water. Maximum contaminant levels (MCLs) to protect public health and secondary MCLs to protect aesthetic qualities (taste, color, and odor) are published in 40 CFR § 141 and 40 CFR § 143, respectively. The State Department of Health Services, Division of Drinking Water and Environmental Management, within the Health and Welfare Agency, regulates public drinking water supplies and implements provisions of the federal SDWA.

Other Federal Laws

Other federal laws that protect water quality through the regulation of hazardous waste management and cleanup include the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. § 9601 et seq.), as amended by the Superfund Amendment and Reauthorization Act (SARA) (P.L. 99-499), and the Resource Conservation and Recovery Act (RCRA). These regulations are discussed in Section 3.11, Hazardous Materials and Wastes.

3.7.2.2 State Laws and Regulations

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act (California Water Code Division 7 Section 13000), the SWRCB is provided with the ultimate authority over state water quality policy. However, Porter-Cologne also established nine RWQCBs to provide oversight on water quality issues at regional and local levels. RWQCBs are required to prepare and update a Basin Plan for their respective regions. Pursuant to the CWA NPDES program, RWQCB also issues permits for point-source discharges that must meet the water quality objectives and must protect the beneficial uses defined in the Basin Plan. The Basin Plan is described further below for local and regional regulations.

Industrial General Permit

The Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities (Industrial General Permit; SWRCB Water Quality Order 97-03-DWQ) regulates industrial site storm water management. These regulations prohibit discharges of non-storm-water to waters of the U.S. from a broad range of industrial activities, including mining, manufacturing, disposal, recycling, and transportation, unless such discharges comply with a site-specific NPDES permit. Storm water discharges from industrial facilities covered under this permit must also incorporate proper pollution prevention controls (i.e., develop and implement a Storm Water Pollution Prevention Plan [SWPPP]) in accordance with the Industrial General Permit.

NPDES Construction General Permit

In July 2010, California adopted the Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities NPDES permit (Order 2009-0009-DWQ [as amended by Order 2010-0014-DWQ]). SWRCB Water Quality Order 2009-0009-DWQ (Construction General Permit) regulates construction site storm water management. Dischargers whose

projects disturb 1 or more acres of soil, or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under the Construction General Permit for discharges of storm water associated with construction activity. This requirement includes linear projects that disturb 1 or more acres. Construction activities subject to this permit include clearing, grading, and disturbances to the ground such as stockpiling or excavation, but do not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility.

Permit applicants are required to submit a Notice of Intent (NOI) to the SWRCB and to prepare a SWPPP. The SWPPP must identify best management practices (BMPs) that are to be implemented for reducing construction effects on receiving water quality. BMPs are directed at implementing sediment- and erosion-control measures and other measures to control chemical contaminants. The SWPPP also includes descriptions of the BMPs to reduce pollutants in storm water discharges after all construction phases have been completed at the site (post-construction BMPs). Additionally, the SWPPP must contain a visual monitoring program, a chemical monitoring program for "nonvisible" pollutants to be implemented if there is a failure of BMPs.

The permit includes several new requirements (as compared to the previous Construction General Permit, 99-08-DWQ), including risk-level assessment for construction sites, an active storm water effluent monitoring and reporting program during construction (for risk level II and III sites), rain event action plans for certain higher risk sites, and numeric effluent limitations and numeric action levels for pH and turbidity.

NPDES Permit for Limited Threat Discharges to Surface Waters

SWRCB Order R6T-2008-0023 establishes a monitoring and reporting program for activities that have a low threat to surface water quality, including diverted stream flows; construction dewatering; dredge spoils dewatering; subterranean seepage dewatering; well construction and pump testing of aquifer supplies; geothermal well testing; hydrostatic testing; maintenance, repair, and disinfection of potable water supply pipelines, tanks, reservoirs, etc.; water treatment plant backflushing, residuals, and wasting; fire hydrant testing or flushing; and hydrostatic testing of newly constructed and yet to be utilized pipelines, tanks, reservoirs, etc., used for purposes other than potable water supply (gas, oil, reclaimed water, etc.).

This NPDES permit is intended to regulate the limited-threat discharges identified above and is not intended for groundwater contamination cleanup projects or to regulate discharges that contain industrial chemicals, chlorinated hydrocarbons, organic pollutants, herbicides, pesticides, oil and grease, radioactivity, salinity, or any substance or physical property in significant quantities that may adversely affect beneficial uses or cause acute or chronic toxicity to aquatic life in receiving waters.

General Waste Discharge Requirements for Discharges to Land with a Low Threat to Water Quality

SWRCB Water Quality Order 2003-0003-DWQ regulates specified low-threat discharges of waste to land with underlying groundwater, including well boring wastes, clear water discharges, small dewatering projects, and inert wastes.

General Waste Discharge Requirements for Discharges to Land by Small Domestic Wastewater Treatment Systems

Domestic wastewater treatment and disposal systems with a maximum average daily flow of 20,000 gallons (75,700 liters) or less that discharge to land (small domestic systems) are regulated under Water Quality Order 97-10-DWQ. Single-family residences with small domestic systems are specifically excluded from coverage.

California Fish and Game Code
Under Sections 1601–1603 of the Fish and Game Code, agencies are required to notify the California Department of Fish and Game prior to implementing any project that would divert, obstruct, or change the natural flow or bed, channel, or bank of any river, stream, or lake.

3.7.2.3 Local and Regional Plans/Policies

Water Quality Control Plan
The Water Quality Control Plan for the Lahontan Region (Basin Plan) sets forth water quality standards and control measures for surface and ground waters of the Lahontan Region. The plan designates beneficial uses for water bodies and establishes water quality objectives, waste discharge prohibitions, and other implementation measures to protect those beneficial uses. State water quality standards also include a Nondegradation Policy. Water quality control measures include TMDLs, which are often, but not always, adopted as Basin Plan amendments. The Lahontan RWQCB administers the Basin Plan for the region.

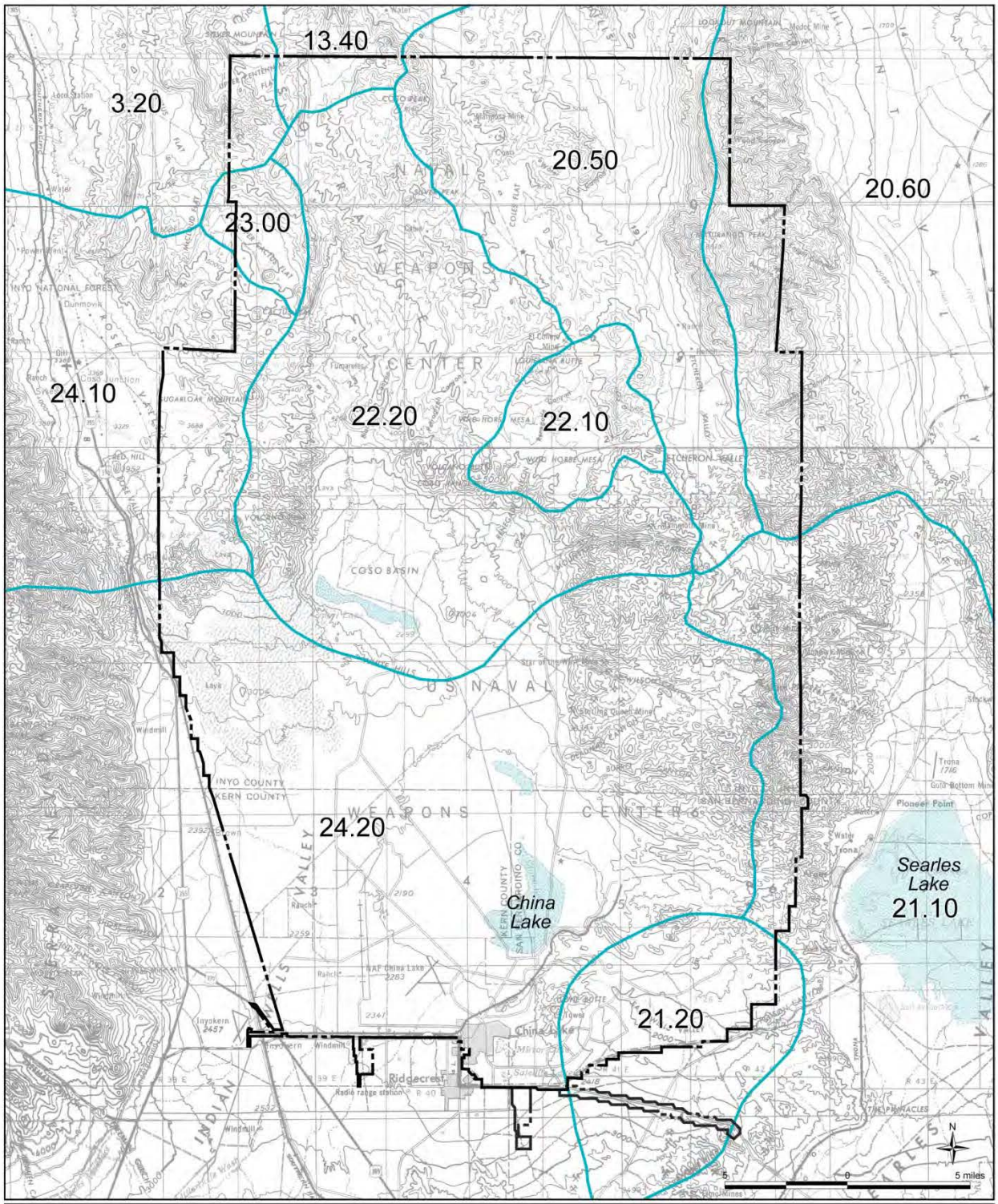
In addition to the Basin Plan, federal water quality standards for certain toxic pollutants apply to surface waters within California, including the Lahontan Region. These standards are contained in the National Toxics Rule (40 CFR 131.36) and the California Toxics Rule (40 CFR 131.37). The SWRCB adopted a statewide implementation policy for the federal toxics standards. The federal standards have not yet been physically incorporated into the Basin Plan.

Indian Wells Valley Cooperative Groundwater Management Plan
In September 1995, the IWV Cooperative Groundwater Management Plan was signed by the major water-producing entities within IWV. These entities are NAWSCL, BLM, the Indian Wells Valley Water District (IWVWD), North American Chemical Corporation (now Searles Valley Minerals), Quist Farms, the city of Ridgecrest, IWV Airport District, Inyokern Community Services District, Kern County Water Agency, the County of Kern, and the East Kern County Resources Conservation District. The Groundwater Management Plan was revised and accepted again in March 2006. It includes measures to conserve, protect, and manage groundwater resources within IWV. The water purveyors take an active role in resource management and meet monthly to discuss groundwater issues occurring at the local and state levels, and to share groundwater data collected and analyzed by the various entities. Subcommittees are established as needed to investigate issues such as groundwater sampling protocols, water level monitoring programs, water banking/transfers, and other supplemental water supplies for IWV. However, the responsibility for managing the production and distribution of groundwater to meet each agency's needs remains with the individual water producer (U.S. Navy 2004a). Additionally, since the IWV basin is not adjudicated, and the group of water producers is not a regulatory body, the resultant IWV Cooperative Groundwater Management Plan is also a non-regulatory, non-binding agreement.

3.7.3 Surface Water Resources

NAWSCL is in the South Lahontan Basin, a region that extends from north of Mono Lake to the Colorado Basin on the eastern side of the Sierra Nevada. Average annual precipitation in the South Lahontan Basin ranges from about 70 inches (178 cm) at high elevations in the Sierra Nevada to less than 5 inches (13 cm) in the lower elevations of the basin. Within NAWSCL, average annual precipitation ranges from about 10 inches (25 cm) in the Coso and Argus ranges to less than 5 inches (13 cm) at the lower elevations (Rantz 1967; St. Amand 1986).

The Lahontan RWQCB divides the South Lahontan Basin into hydrologic units representing watersheds or groups of watersheds (Lahontan RWQCB 1994). Both the North Range and South Range contain all or a portion of 11 hydrologic units (Figures 3.7-1 and 3.7-2). Hydrologic unit numbers show the progressively



CHINALAKEEIS/037

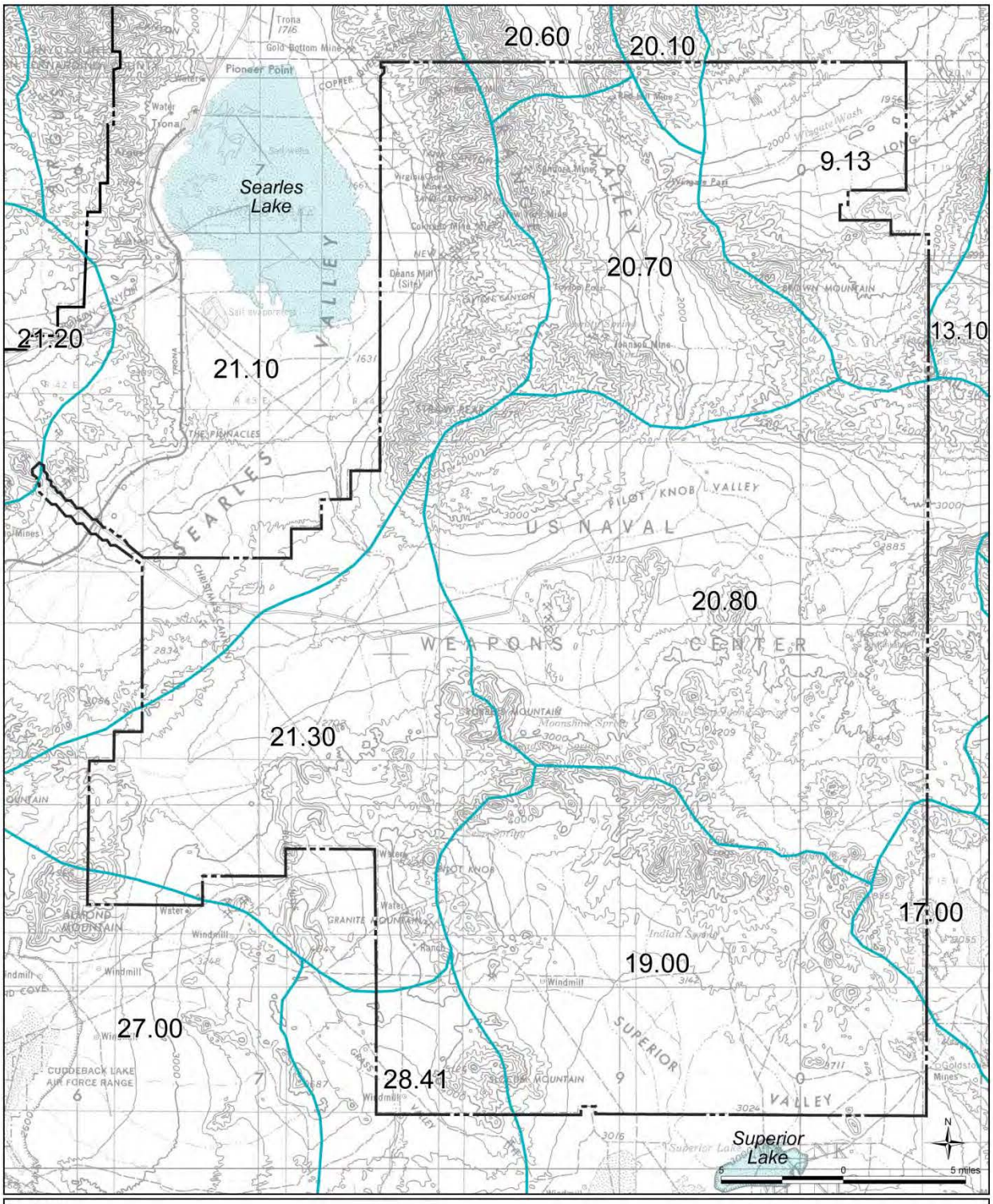
LEGEND

21.20 State Hydrologic Unit Designation
Watershed Boundary
Installation Boundary

Source: Adapted from LRWQCB 1994

Watershed Boundaries North Range

Figure 3.7-1



LEGEND

21.20 State Hydrologic Unit Designation

Watershed Boundary

Installation Boundary

Source: Adapted from LRWQCB 1994

CHINALAKEEIS/038

Watershed Boundaries South Range

Figure 3.7-2

larger watersheds to which smaller watersheds belong. NAWSCL is associated with China Lake Hydrological Area (HA) 624.20, whereas Searles Lake is associated with Searles Valley HA 621.10. Both HAs comprise various other Hydrological Units (HUs) and subareas. For example, in Figure 3.7-1, units 21.10, 21.20, and 21.30 belong to HA 621.00 (Searles Lake watershed), while units 24.10 and 24.20 belong to HA 624.00 (China Lake watershed).

The Lahontan RWQCB has identified existing and potential beneficial uses of surface water for each of these hydrologic units. The most sensitive beneficial use identified in each watershed is municipal drinking water supply (municipal), but also includes other beneficial uses such as agricultural, industrial, and groundwater supply; recreational use; and wildlife habitat. The Lahontan RWQCB considers beneficial uses when setting water quality objectives for surface waters.

No areas within NAWSCL have the necessary characteristics of jurisdictional waters or wetlands: none are navigable, none cross state lines, and none are used for interstate commerce (U.S. Navy 2000). However, there are portions of on-installation drainages that are tributary to drainage features outside of NAWSCL boundaries that the U.S. Army Corps of Engineers (USACE) has identified as jurisdictional waters of the U.S. due to the interstate commerce connection. These jurisdictional waters are the Owens River, Mojave River, and Amargosa River.

The amount of information concerning surface water conditions for each of the watersheds at NAWSCL varies. More information is available for the North Range than the South Range. Within the North Range, the IWV and Coso watersheds are probably the best studied. The IWV watershed contains a wide range of hydrologic conditions that, in many respects, represent the range of conditions present throughout the region. As a result, inferences can be drawn concerning hydrologic conditions in some watersheds based on information from similar watersheds elsewhere (U.S. Navy 2004a).

3.7.3.1 North Range

Drainage

On the North Range, the IWV forms a natural basin that receives drainage from the southern Sierra Nevada on the west, the Coso Range on the north, the Argus Range on the east, and the El Paso Mountains on the south. The IWV watershed consists of approximately 860 square miles (2,227 square kilometers), with nearly 500 square miles (1,295 square kilometers) in the mountains and hills and approximately 360 square miles (932.4 square kilometers) on the valley floor. Three playa lakes (China Lake, Mirror Lake, and Satellite Lake) are located in the east-central portion of the IWV and are the primary surface water and groundwater discharge points (IWVCGTAC 2008).

Most of the precipitation that flows into the region of the North Range falls in the Sierra Nevada. About 53 percent of the watersheds that extend within the North Range originate in the Sierra Nevada (St. Amand 1986). The Coso HU, including the Renegade Canyon and Mountain Springs Canyon watersheds, receives about 31 percent of the total precipitation. About 8 percent of the precipitation falls on the southern Argus Range in the eastern part of the IWV HU south of Mountain Springs Canyon. The remaining 7 to 8 percent falls on the El Paso Mountains, Rademacher Hills, and Spangler Hills in the south part of the IWV HU. Although not the largest component of inflow to the IWV, runoff from the El Paso Mountains is important to developed areas because of the contribution to flooding along washes leading to China Lake, Mirror Lake, and Satellite Lake playas (dry lake beds) (U.S. Navy 2004a).

Some of the precipitation that falls on the west slope of the Coso Range, including the watershed of Upper Cactus Flat, drains into Rose Valley. Rose Valley has one of the few permanent surface water features in the area, called Little Lake, which lies outside of the Installation boundary and is topographically upstream of IWV. Precipitation on the northwest slope of the Coso Range drains to the

Owens HU, which contains Owens Lake. Other perennial surface water features are Haiwee Reservoir, Sand Canyon Creek, and Indian Wells Canyon Creek. The area containing the northeast slope of the Coso Range and the northern half of the Argus Range receives about 10 inches (25 cm) of precipitation per year. This area lies within the Ballarat HU, which drains to Panamint Valley. The eastern slope of the southern half of the Argus Range lies within the Trona HU and drains to Searles Valley. Salt Wells Valley, which receives runoff from Spangler Hills and the southern tip of the Argus Range, is also part of the Trona HU and is connected to Searles Valley through Poison Canyon, which is also the route of Highway 178 (U.S. Navy 2004a).

Flooding

Although precipitation is limited in the area, occasional storms can produce intense rainfall and subsequent localized flooding. Storm water flooding occasionally has been a significant problem for the Mainsite developed areas on the North Range. Most of the runoff in IWV comes from the southwest and forms four major ephemeral (intermittent) streams: El Paso Wash, Little Dixie Wash, Ridgecrest Wash, and Bowman Wash. El Paso Wash crosses Highway 178 about 2 miles (3.22 kilometers) west of the Main Gate and runs east of Armitage Airfield before discharging into China Lake playa. Little Dixie Wash originates in the very southwest portion of the basin within the southern Sierra Nevada, crosses Highway 178 east of Inyokern, and runs in a northeast direction to China Lake playa. Ridgecrest Wash enters NAWSCL near the Main Gate, flows northeast toward Michelson Laboratory area, and discharges to the China Lake playa. Bowman Wash originates south of Ridgecrest, runs along Bowman Road, and then discharges into Satellite Lake (U.S. Navy 2004a).

The Federal Emergency Management Act-designated flood zone for the South Range and the southeast portion of the North Range is undetermined. The remainder of the North Range is categorized as moderate to low flood risk and is outside of the 100- and 500-year floodplains (Figure 3.7-3).

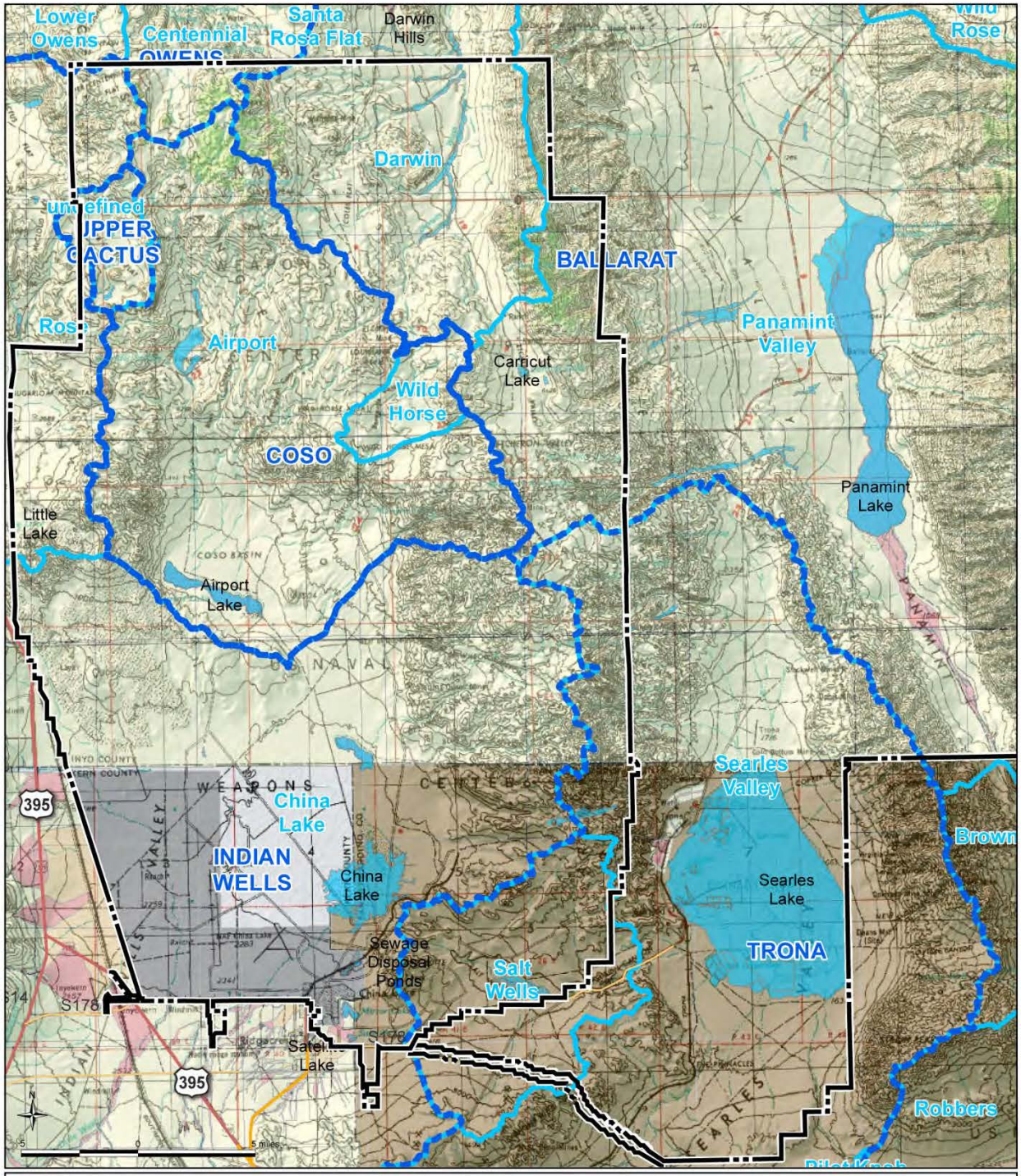
Springs and Seeps

Approximately 80 springs have been identified and mapped on the North Range (Figure 3.7-4). The springs range from small areas of low flow seepage to fairly large areas of riparian vegetation and flows of up to 6 gallons (22.71 liters) per minute. Many of these springs were developed by miners and ranchers before the DoN assumed management of the lands.

Water is currently extracted from the Coso Cold Springs for domestic use by the community of Darwin and from New House Spring and Old House Spring for use by the DoN for construction, fire-fighting, and wildlife purposes. Tennessee Spring provides water for construction and wildlife purposes. Most of the springs in the North Range exhibit good water quality, with total dissolved solids (TDS) ranging from 185 to 1,000 parts per million (ppm) (Stoner et al. 1995).

Seeps at NAWSCL consist of two interconnected seep systems: the Lark Seep System and the G-1 Seep System, both of which are located near the southern end of the North Range. Lark Seep and G-1 Seep are brackish marshes formed on the edge of the China Lake playa. The seeps are not natural features but have resulted from various engineered sources, including leakage and percolation from the Ridgecrest wastewater treatment facility facultative evaporation and storage ponds, irrigation water from the NAWSCL golf course, Installation housing and landscape water, and leakage from the NAWSCL potable water distribution system.

Coso Hot Springs is a series of geothermal (hot) springs in Coso Range. Moyle (1977) identified more than 200 wells and springs within a 20-mile (32.2-kilometer) radius of Coso Hot Springs. Moyle reported that the shallow water at the land surface in the Coso Hot Springs area typically has a low pH (acidic) level, in the range of about 1.5 to 4.5. The acidity in these sources is caused by hydrogen sulfide, which produces sulfuric acid on contact with oxygen. As a result, these waters become highly mineralized and are nonpotable (U.S. Navy 2004a). Please refer to Section 3.6.7 (Geology and Soils) for additional information on geothermal activities.



LEGEND

FEMA Flood Mapping

Moderate to Low Risk Areas

- X: Area determined to be outside the 100- and 500-year floodplains
- X500: Area inundated by 500-year flooding

High Risk Areas

- A: Area inundated by 100-year flooding for which no BFEs have been established

Undetermined Risk Areas

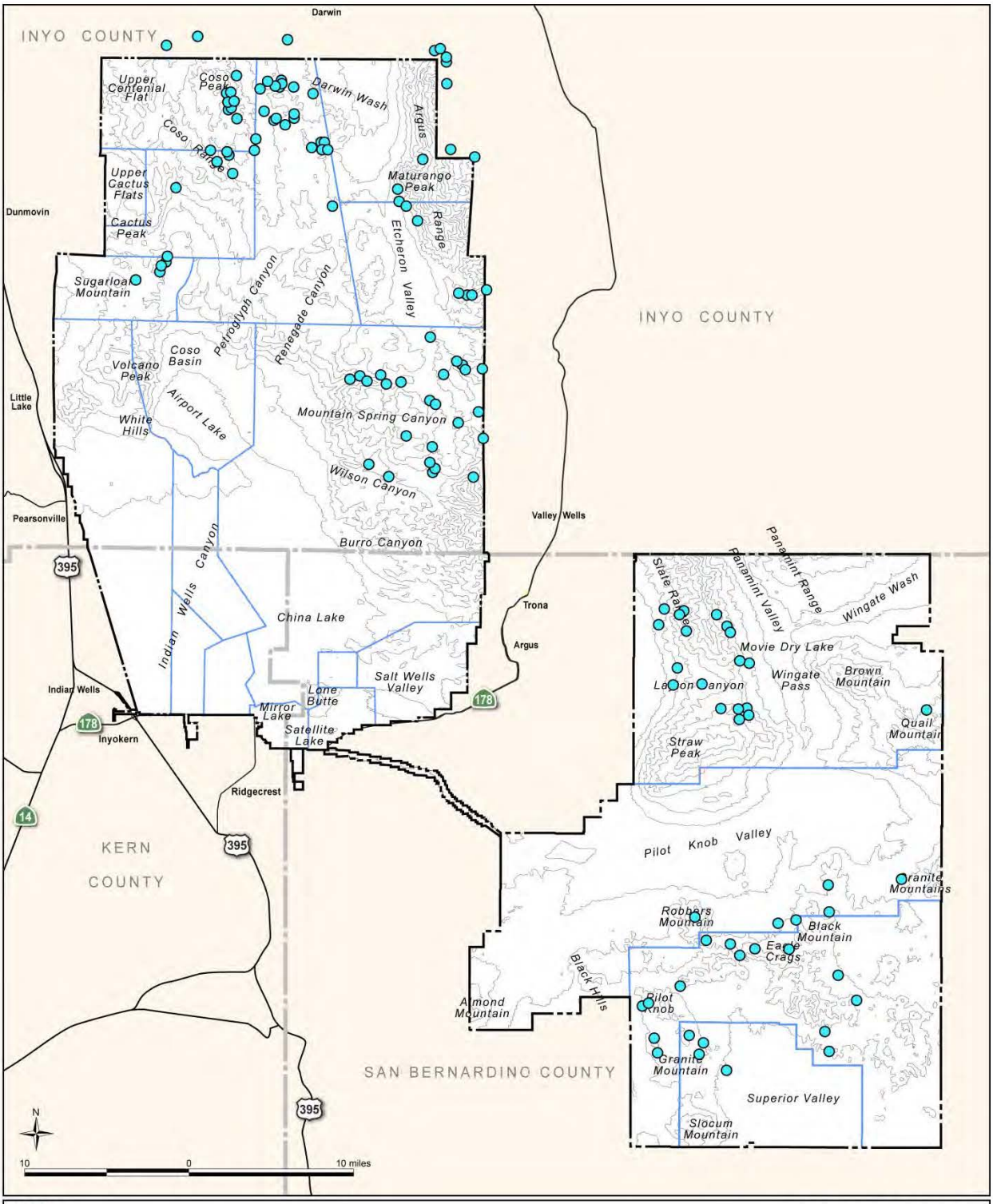
- D: Area of undetermined but possible flood hazards
- ANI (Area Not Included): Area that is located within a community or county not mapped on any published FIRM

- Hydrologic Units
- Watersheds
- Installation Boundary

CHINALAKEEIS/061

Watersheds and Floodplain Designations North Range

Figure 3.7-3


INYO COUNTY
Darwin
Upper Centennial Flat
Coso Peak
Darwin Wash
Argus
Coso Range
Upper Cactus Flats
Maturango Peak
Dunmovin
Cactus Peak
Etcheron Valley
Range
Sugarloaf Mountain
Petroglyph Canyon
Renegade Canyon
INYO COUNTY
Coso Basin
Volcano Peak
Little Lake
Airport Lake
White Hills
Mountain Spring Canyon
Wilson Canyon
Pearsonville
Valley Wells
Burro Canyon
Panamint Range
Slate Range
Panamint Valley
Wingate Wash
Indian Wells Canyon
China Lake
Trona
Movie Dry Lake
Argus
Salt Wells Valley
Wingate Pass
Brown Mountain
Indian Wells
Lone Butte
Mirror Lake
Satellite Lake
Quail Mountain
Inyokern
Straw Peak
Ridgecrest
Pilot Knob Valley
KERN COUNTY
Granite Mountains
Robbers Mountain
Black Mountain
Eagle Crags
Black Hills
Almond Mountain
Pilot Knob
Granite Mountain
SAN BERNARDINO COUNTY
Superior Valley
Slocum Mountain
N
10
0
10 miles
LEGEND
Spring Location
Land Managment Unit
Installation Boundary
NAWSCL Springs
Figure 3.7-4
CHINALAKEEIS/075

3.7.3.2 South Range

Drainage

Most of the South Range, including the Mojave B North and Randsburg Wash areas, is in the upper portion of the Ballarat HU or the Trona HU, which drain to the Panamint and Searles valleys, respectively. The crest of the Slate Range forms the division between these watersheds in Mojave B North. The watershed of Wingate Wash, in the northeast corner of the South Range, is within the Armargosa HU, which drains to Death Valley.

Most of the Mojave B South area in the South Range lies within the Superior HU, which drains to Superior Valley. The southwest corner lies within the Mojave HU, which drains to Harper Lake. The northeast corner is within the Ballarat HU. The extreme eastern edge lies within the Goldstone HU, which drains to the Goldstone Lake playa.

The South Range receives less than 5 inches (12.7 cm) of rainfall on average per year (Rantz 1967). Larger amounts of precipitation probably fall on the higher elevations within the Slate Range, Panamint Range, and Quail Mountains, as well as Eagle Crags, Brown Mountain, Pilot Knob, Slocum Mountain, Robbers Mountain, and Granite Mountain. Although most of this precipitation evaporates before reaching groundwater, the presence of springs along the alluvial apron of some of the peaks indicates that some of the rainfall percolates through joints and fractures in the bedrock. Some of these springs have been used historically by travelers as a potable water supply, although they are generally characterized by low, seasonally variable flows (U.S. Navy 1989a, 1989b).

Although there are several dry lakebeds, there are no permanent water bodies within the South Range. Movie Lake is a playa located in the Mojave B North LMU in the upper Panamint Valley opposite Wingate Wash. A number of playa lakes exist on the floor of Superior Valley south of the boundary of the South Range. Goldstone Lake playa is just outside the eastern boundary of the Mojave B LMU (U.S. Navy 2004a).

Flooding

As with the North Range, intense rainfall may result in flash flooding on washes within the South Range (U.S. Navy 1989a). Reports of flooding on the South Range are anecdotal, and no systematic studies of flood potential have been performed (U.S. Navy 2004a).

Springs and Seeps

More than 40 springs and seeps have been identified on the South Range (see Figure 3.7-4). The number of springs and seeps can vary depending on climate. Most of the springs occur either in Slate Range or in the Eagle Crags area of Mojave B South (U.S. Navy 2004a).

3.7.3.3 Surface Water Quality

Impaired Water Bodies

Portions of both the North and South Ranges contribute runoff to Searles Valley, which drains into Searles Lake. Searles Lake is listed as impaired by California in accordance with CWA Section 303(d) for salinity/TDS/chlorides and total petroleum hydrocarbons. The Armargosa River is also on the 303(d) list as being impaired for arsenic. Although this river is approximately 10 miles (16.1 kilometers) from the South Range, a small portion of the range is in the Armargosa HA, which could indicate that runoff could reach the river under certain hydrological conditions.

3.7.4 Groundwater

The groundwater basins generally correspond to the topographically low portions of the watersheds (Figure 3.7-5). The basins represent the alluvium-filled regions in which groundwater are stored and extracted (alluvium refers to the rock, sand, silt, and clay that is eroded from hillsides, transported downhill, and deposited primarily by water).

However, groundwater is not limited to the basin areas, since it is also present in joints and fractures in bedrock bordering the basins (U.S. Navy 2004a).

Groundwater basins are not necessarily isolated from each other, and groundwater may flow across the boundaries of one basin into an adjacent basin under certain conditions (U.S. Navy 2004a). Current research indicates the Lahontan groundwater basin is not a closed system, and recharge to the basin is greater than indicated by previous studies. However, this finding has not been fully investigated, and groundwater connections between basins are not well understood (U.S. Navy 2004a).

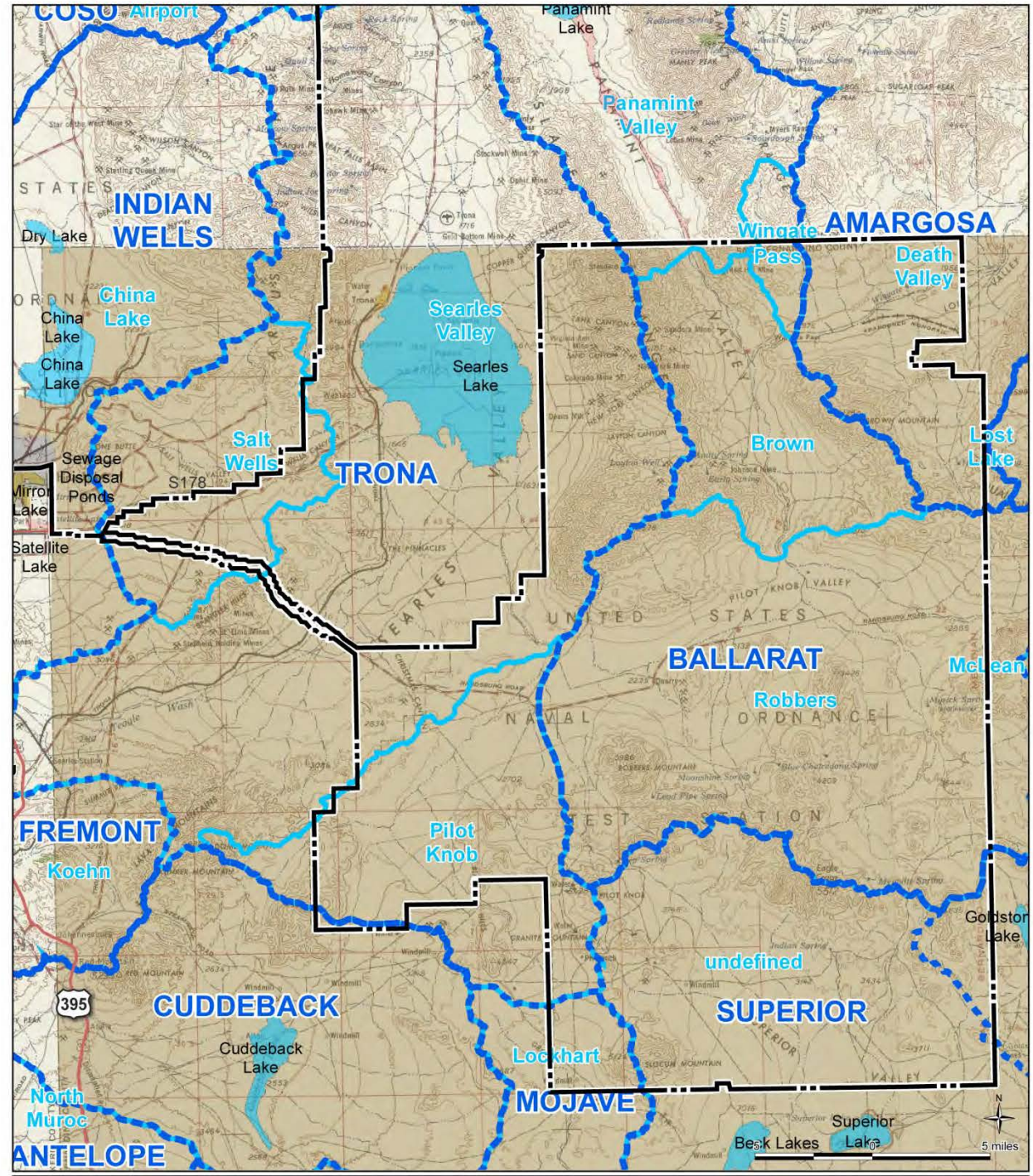
Most groundwater studies in the region have focused on IWV groundwater conditions mainly because the valley represents the principal source of drinking water for the Installation and for the major population centers in the area. Studies of the hydrogeology of IWV have been conducted by the U.S. Geological Survey, Bureau of Reclamation, DoN, Eastern Kern County Resource Conservation District, and others. Additional information concerning groundwater conditions is available from studies of the Coso KGRA. However, relatively little information is available about groundwater in other areas, including the South Range.

NAWSCL performed a hydrogeologic study of IWV, Salt Wells Valley, and Randsburg Wash to support the investigations of Installation Restoration Program (IRP) sites. The field investigation began in June 1999 and involved exploratory borings, installation of monitoring wells, quarterly groundwater quality sampling, and sampling to determine the degree of interconnection between water bearing units (Tetra Tech 2003). The study determined that the IWV was underlain by three distinct water-bearing zones where flow between the zones appeared to be minimal. Salt Wells Valley and Randsburg Wash are underlain by a single water-bearing zone.

3.7.4.1 North Range

The IWV, Coso Valley, Salt Wells Valley, and Rose Valley basins underlie much of the southern portion of the North Range. The IWV Basin is the sole source of drinking water for NAWSCL facilities in the North Range. Hydrogeologic evidence indicates that more than one aquifer is present in the IWV Basin beneath the North Range (U.S. Navy 2004a). An aquifer is a porous, water-bearing geologic formation capable of yielding quantities of water to private and commercial users through wells. The ability of an aquifer to yield water to a well depends on the size of the interconnected pores in the aquifer material (i.e., permeability). The Basewide Hydrogeologic Characterization Report determined that the IWV Basin contained a shallow, an intermediate, and a deep hydrogeologic zone separated by sediments with low permeability (Tetra Tech 2003). The shallow aquifer is present in the eastern side of IWV and may include numerous local perched water-bearing zones. At the IWV Basin margins to the west, the separation between aquifers is less distinct than near the center of the basin (U.S. Navy 2004a).

Prior investigations of the IWV groundwater basin have estimated quantities of total basin recharge ranging from 5,000 to 11,000 acre-feet per year from precipitation (Krieger & Stewart 2010). Groundwater pumping from IWV had begun to exceed these amounts by 1959, and was estimated at about 22,000 acre-feet (27.1 million cubic meters) per year in 1985 (Berenbrock and Martin 1991).



LEGEND

FEMA Flood Mapping

Moderate to Low Risk Areas

- X: Area determined to be outside the 100- and 500-year floodplains
- X500: Area inundated by 500-year flooding

High Risk Areas

- A: Area inundated by 100-year flooding for which no BFEs have been established

Undetermined Risk Areas

- D: Area of undetermined but possible flood hazards
- ANI (Area Not Included): Area that is located within a community or county not mapped on any published FIRM
- Hydrologic Units
- Watersheds
- Installation Boundary

CHINALAKEEIS/063

Watersheds and Floodplain Designations South Range

Figure 3.7-5

The total groundwater production for IWV for 2010 was approximately 27,285 acre-feet. For the same time period, the DoN produced approximately 1,700 acre-feet. During peak water demand in 2010, the DoN used 2.8 million gallons per day (mgd). Water levels in IWV are decreasing by approximately 0.50 to 1.50 feet (0.2 to 0.5 meter) per year as an average over the entire basin. Areas where large production wells are located exhibit decreases of about 2.0 feet per year, while the areas of no production show areas of slight (0.20 to 0.30 feet [0.06 to 0.09 meter]) decline of water levels (IWVCGTAC 2008). Two recent (December 2013) groundwater model simulations completed by the DoN predict groundwater levels (through 2057) using 2012 water production numbers, including 13,500 acre-feet of new agricultural water consumption. The model simulations predict water levels decreasing by over 4 feet per year in the areas adjacent to the agricultural water production, which would impact many domestic wells in the area. The model results also show coalescing cones of depression and groundwater gradient changes within the next 15 years. The recent active agricultural development includes almost 3,000 acres (1,214 hectares) of land on scattered plots bounded by Highway 395 to the south, the Inyo County line to the north, Highway 14/395 along the west, and adjacent to Brown Road along the eastern perimeter. All the recently developed land is located within Kern County.

The Kern County Planning Department finished their Water Availability and Conservation Report in January 2014 (Todd Engineers 2014). The report compiled information from existing publications and formulated hydrogeologic concepts as well as future planning options for the IWV. NAWSCL is working with the other Stakeholders, including the County of Kern, to implement a plan for maximizing/enhancing the regional aquifer within the IWV.

The Cooperative Groundwater Management Plan for IWV was agreed upon in 1995 and resulted in the IWV Cooperative Groundwater Management Group being formed, which consists of representatives of several signatories. These signatories comprise the major water users and producers for the IWV: NAWSCL, BLM, the city of Ridgecrest, the County of Kern, the East Kern County Resources Conservation District, Searles Valley Minerals, IWV Airport District, the IWVWD, the Inyokern Community Services District, Kern County Water Agency, and Quist Farms.

The IWV Cooperative Groundwater Management Group was established to accomplish the following objectives:

- Limit additional large-scale pumping in areas that appear to be adversely impacted;
- Distribute new groundwater extraction within IWV in a manner that would minimize adverse effects to existing groundwater conditions (levels and quality), and maximize the long-term supply within IWV;
- Aggressively pursue the development and implementation of water conservation policy and education programs;
- Encourage the use of treated water; reclaimed water; recycled, gray, and lower quality water where appropriate and economically feasible;
- Explore the potential for other types of water management programs that are beneficial to IWV;
- Continue cooperative efforts to develop information and data that contribute to further defining and better understanding the groundwater resource in IWV; and
- Develop an interagency management framework to implement and enforce the objectives of the Cooperative Groundwater Management Plan.

IWV's principal water users and producers are the NAWSCL, IWVWD, Searles Valley Minerals, and Meadowbrook Farms. It is estimated that there are approximately 670 individual domestic wells and 120 residential cooperative wells located throughout IWV.

The Eastern Kern County Resource Conservation District received a Local Groundwater Assistance Fund Grant (Assembly Bill 303) on behalf of the IWV Cooperative Groundwater Management Group. The purpose of the grant was to conduct groundwater studies to assist in the effective management of IWV groundwater resources. The Navy Seabees were responsible for drilling 10 monitoring wells in the southwest area to assist in these studies.

The 2010 Urban Water Management Plan was adopted on June 20, 2011 by the IWVWD to efficiently and effectively manage water supplies in IWV. The IWV Cooperative Groundwater Management Group has concurred with the plan (Krieger & Stewart 2010).

Groundwater Quality

Water quality varies widely over the IWV Basin. Groundwater in the valley contains varying amounts of sodium and potassium. The anions are mainly chloride, sulfate, bicarbonate, and some carbonate. Some manganese and fluoride ions are found in the northern portions of IWV. Comprehensive water quality studies were conducted by Whelan and Baskin (1987) and Houghton (1994). In general, water quality data reflect good-to-excellent water throughout much of the extent of the deep aquifer (IWVCGTAC 2008). Groundwater in the shallow aquifer of the IWV Basin is typically poor quality. Unlike recharge to the deep aquifer, most of which comes from infiltration of runoff along the range fronts, recharge to the shallow aquifer includes direct infiltration from washes and playas, irrigation, water distribution lines, and wastewater treatment ponds. Because it is nearer to the China Lake playa, shallow groundwater reflects the concentration of salts in shallow sediments in this area.

TDS is a measure of salinity in water, and is often used as an indicator of overall groundwater quality. The California Secondary Maximum Contaminant Level (MCL) for TDS is 1,000 ppm. Secondary MCLs are based on consumer acceptance (taste, odor, color, etc.) rather than public health concerns. There is also a recommended MCL of 500 ppm and a short-term MCL of 1,500 ppm. State Department of Health Services data show that much of the water in IWV ranges from 200 to 600 ppm in TDS.

The average drinking water delivered to the customer in IWV is about 400 ppm in TDS concentrations (IWVCGTAC 2008). In general, the TDS of the groundwater in IWV is highest in the northeasterly portion (the China Lake playa), where TDS levels can exceed 5,000 ppm, and lowest in the Intermediate Area and the areas located southerly and southwesterly of Ridgecrest, where TDS levels are typically less than 500 ppm (based on water quality data from the DoN, Kern County Water Agency, previous studies, and IWVWD files) (Krieger & Stewart 2010).

Although degradation has not been detected within the Intermediate Area, and water quality therein is still excellent (typically less than 500 ppm of TDS), a continuing decline of the water levels in the Intermediate Area could increase the threat of saline water intrusion from beneath the China Lake playa. To address the threat of potential saline water intrusion into the Intermediate Area, the DoN and IWVWD have relocated several of their major water production wells to areas farther west and southwest.

3.7.4.2 South Range

Groundwater conditions in the South Range are not well documented due to limited control points (wells). The depth to groundwater ranges from about 250 to 300 feet (76.2 to 91.4 meters) below the surface. The groundwater flow direction is generally to the north-northeast in the western Pilot Knob Valley. Groundwater depths and flow direction in the remote areas of the South Range are unknown. Direct

recharge to the South Range aquifers are minimal based on lack of rainfall and low permeability of the sediments. The principal groundwater basin in the Mojave B North LMU is the Panamint Valley. Since the basin is believed to have no outlet, groundwater at depth in the center of the basin is expected to be saline (U.S. Navy 1989a, 1989b).

Several wells were installed in the Randsburg Wash LMU to provide potable water for mission activities. There are four production wells in and adjacent to the Main Area in Pilot Knob Valley (Stoner 2011).

Navy Well #25A, located at the eastern end of Gunline Road, provides water to the Main Area. Well DSL #2, located about 1.5 miles (2.4 kilometers) north of Well #25A, provides water to the P454 facility, and Navy Well #26 provides water to Sea Site #1 facility. Well #24 was drilled in 2009 and was permitted in 2010 (Stoner 2011). All four wells provide water that meets state requirements, although bottled water is also provided.

The Superior Valley Groundwater Basin also provides potable water produced from the Superior Valley Well, which is located 500 feet (152.4 meters) southwest of the Main Test Facility (Stoner 2011; U.S. Navy 2004a).

This page intentionally left blank.

3.8 SOCIOECONOMICS

The term “socioeconomics” describes the basic attributes and resources of the human environment, with special reference toward population, employment, and income. Because substantial changes in these socioeconomic indicators may influence other indicators and related variables, such as the provisions of community services and utilities and the cost and availability of housing, these are critical indicators of socioeconomic conditions.

3.8.1 Region of Influence

The ROI for socioeconomics is NAWSCL’s regional population centers of China Lake Acres, Inyokern, and Ridgecrest, and the surrounding counties of Inyo, Kern, and San Bernardino. This section also describes major socioeconomic indicators for those U.S. Census block groups surrounding NAWSCL. The 33 block groups examined are located in Inyo, Kern, and San Bernardino counties. The inclusion of these geographies provides a more detailed description of socioeconomic trends and indicators within the region.

The city of Ridgecrest adjoins NAWSCL and is the population center for the northern Mojave Desert area. As such, it serves as a major shopping destination for smaller surrounding communities and is home to many NAWSCL employees. Inyokern is primarily service and retail oriented, and serves, to a much lesser extent, as an alternate, more rural, location for NAWSCL employee residences. China Lake Acres is located just east of Inyokern at the southern edge of NAWSCL.

The existing setting, population, housing, employment, and income of the area are presented in this section. Population data include the number of residents and minorities in the project area. Housing data describe housing unit and household size by tenure. Employment and income data include the size of the labor force, labor share by industry sector, unemployment rates, income per capita, and the economic impact of NAWSCL on the surrounding community. Historic socioeconomic data were compiled from the 2000 Decennial Census (U.S. Census Bureau 2002a, 2002b), while current data were compiled from the 2006–2010 U.S. Census Bureau American Community Survey (U.S. Census Bureau 2011).

3.8.2 Population

3.8.2.1 Population Trends

Population numbers and annual average percentage change in population for California; the counties of Inyo, Kern, and San Bernardino; and the communities of China Lake Acres, Inyokern, and Ridgecrest are shown in Table 3.8-1. While California experienced a relatively low level of annual population growth from 2000 to 2010 (1.0 percent), the counties of Kern and San Bernardino gained population more quickly than the state overall, at 2.7 percent and 1.9 percent, respectively. Inyo County lost population at an average rate of about 0.3 percent annually over the same period.

The communities of China Lake Acres, Inyokern, and Ridgecrest are located in Kern County. All communities experienced population growth from 2000 to 2010, with Inyokern’s and Ridgecrest’s annual average growth rates higher (1.2 and 1.1 percent, respectively) than the annual average growth rate seen for China Lake Acres (0.7 percent).

3.8.2.2 Minority Population

Data on the minority population in the study area in 2010 were gathered to allow for the identification of potential disproportionate impacts on these populations.

Table 3.8-1
Population Trends, 2000 and 2010 Estimates

Geographies	2000 Population	2010 Population Estimate	Annual Average Percentage Change
Communities			
China Lake Acres	1,761	1,876	0.7%
Inyokern	984	1,099	1.2%
Ridgecrest	24,927	27,616	1.1%
Counties			
Inyo County	17,945	18,546	0.3%
Kern County	661,645	839,631	2.7%
San Bernardino County	1,709,434	2,035,210	1.9%
State			
California	33,871,648	37,253,956	1.0%

Source: U.S. Census Bureau 2002a, 2011.

The data on minority status are presented in Table 3.8-2. As illustrated below, the counties of Kern and San Bernardino both have higher percentages of total minorities than the state overall, while Inyo County is home to a lower percentage of total minorities than the state as a whole. However, in terms of Hispanic population, both Kern and San Bernardino counties exceed the state percentage of 36.7 percent, at 47.7 percent and 47.9 percent Hispanic population, respectively. Inyo County's Hispanic population is 18.0 percent. In the Kern County communities examined, China Lake Acres, Inyokern, and Ridgecrest have much lower percentages of Hispanic residents than the county overall (as well as the state overall), with 9.4 percent, 9.5 percent, and 15.7 percent, respectively. This trend also applies to total minority population in these communities, which ranges from a high of 32.6 percent in Ridgecrest and a low of 16.2 percent in Inyokern. On average, the block group areas examined most closely reflected the demographic composition of Ridgecrest, with 17.6 percent Hispanic population and 33.8 percent total minority population.

3.8.3 Housing

Information on housing units and household size by tenure in the study area is presented in this section (Tables 3.8-3 and 3.8-4).

The counties of Inyo, Kern, and San Bernardino experienced growth in the number of housing units, at average annual rates of 0.4 percent, 2.0 percent, and 1.5 percent, respectively. Inyo County's low growth resulted in a slight annual average increase in occupied housing of 0.4 percent and a slight annual average increase of about 0.8 percent in vacant housing. In Kern County, the expansion of the housing stock led to an annual average increase in occupied housing of about 1.9 percent and an annual increase in vacant housing of approximately 3.2 percent. San Bernardino County's growth in housing units led to an increase in vacant housing units of about 1.3 percent annually, as well as an increase in occupied housing of 3.2 percent annually.

Table 3.8-2
Study Area Race, Ethnicity, and Total Minority, 2010 Estimates

Geographies	White	%	Black/ African American	%	American Indian or Alaska Native	%	Asian	%	Native Hawaiian/ Pacific Islander	%	Some Other Race	%	Two or More Races	%	Hispanic	%	Non-Hispanic White	Total Minority	%
Block Groups																			
Block Group 1, Census Tract 8, Inyo County, California	348	88.8	0	0.0	34	8.7	10	2.6	0	0.0	0	0.0	0	0.0	19	4.8	329	63	16.1
Block Group 2, Census Tract 8, Inyo County, California	444	79.6	0	0.0	0	0.0	0	0.0	0	0.0	114	20.4	0	0.0	126	22.6	343	215	38.5
Block Group 2, Census Tract 52.01, Kern County, California	270	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	270	0	0.0
Block Group 1, Census Tract 53, Kern County, California	772	71.4	113	10.5	0	0.0	159	14.7	0	0.0	37	3.4	0	0.0	87	8.0	722	359	33.2
Block Group 2, Census Tract 53, Kern County, California	955	73.9	148	11.4	23	1.8	128	9.9	0	0.0	39	3.0	0	0.0	165	12.8	829	464	35.9
Block Group 1, Census Tract 54.01, Kern County, California	837	91.2	0	0.0	0	0.0	21	2.3	17	1.9	30	3.3	13	1.4	277	30.2	590	328	35.7
Block Group 2, Census Tract 54.01, Kern County, California	1,588	72.1	55	2.5	0	0.0	0	0.0	31	1.4	328	14.9	202	9.2	463	21.0	1,482	722	32.8
Block Group 3, Census Tract 54.01, Kern County, California	1,020	88.7	61	5.3	0	0.0	41	3.6	0	0.0	0	0.0	28	2.4	0	0.0	1,020	130	11.3

Table 3.8-2
Study Area Race, Ethnicity, and Total Minority, 2010 Estimates

Geographies	White	%	Black/ African American	%	American Indian or Alaska Native	%	Asian	%	Native Hawaiian/ Pacific Islander	%	Some Other Race	%	Two or More Races	%	Hispanic	%	Non-Hispanic White	Total Minority	%
Block Group 4, Census Tract 54.01, Kern County, California	1,061	87.6	19	1.6	27	2.2	66	5.5	0	0.0	0	0.0	38	3.1	70	5.8	1,028	183	15.1
Block Group 5, Census Tract 54.01, Kern County, California	823	85.7	0	0.0	0	0.0	43	4.5	0	0.0	35	3.6	59	6.1	69	7.2	789	171	17.8
Block Group 1, Census Tract 54.02, Kern County, California	1,496	71.6	81	3.9	184	8.8	69	3.3	0	0.0	133	6.4	127	6.1	462	22.1	1,176	914	43.7
Block Group 2, Census Tract 54.02, Kern County, California	983	74.2	69	5.2	15	1.1	121	9.1	0	0.0	9	0.7	127	9.6	20	1.5	975	349	26.4
Block Group 3, Census Tract 54.02, Kern County, California	1,249	83.4	29	1.9	37	2.5	51	3.4	0	0.0	5	0.3	127	8.5	36	2.4	1,218	280	18.7
Block Group 1, Census Tract 54.03, Kern County, California	1,061	87.1	0	0.0	10	0.8	15	1.2	0	0.0	82	6.7	50	4.1	136	11.2	1,007	211	17.3
Block Group 2, Census Tract 54.03, Kern County, California	1,726	66.4	458	17.6	7	0.3	138	5.3	8	0.3	70	2.7	193	7.4	286	11.0	1,510	1,090	41.9
Block Group 3, Census Tract 54.03, Kern County, California	995	93.5	0	0.0	0	0.0	19	1.8	0	0.0	0	0.0	50	4.7	20	1.9	975	89	8.4
Block Group 4, Census Tract 54.03, Kern County, California	802	54.6	151	10.3	0	0.0	101	6.9	58	4.0	199	13.6	157	10.7	282	19.2	745	723	49.3

Table 3.8-2
Study Area Race, Ethnicity, and Total Minority, 2010 Estimates

Geographies	White	%	Black/ African American	%	American Indian or Alaska Native	%	Asian	%	Native Hawaiian/ Pacific Islander	%	Some Other Race	%	Two or More Races	%	Hispanic	%	Non-Hispanic White	Total Minority	%
Block Group 5, Census Tract 54.03, Kern County, California	693	66.8	0	0.0	67	6.5	62	6.0	0	0.0	91	8.8	125	12.0	568	54.7	351	687	66.2
Block Group 1, Census Tract 54.04, Kern County, California	716	66.4	206	19.1	0	0.0	0	0.0	0	0.0	85	7.9	72	6.7	212	19.6	676	403	37.3
Block Group 2, Census Tract 54.04, Kern County, California	1,813	75.4	48	2.0	0	0.0	49	2.0	0	0.0	140	5.8	353	14.7	707	29.4	1,290	1,113	46.3
Block Group 3, Census Tract 54.04, Kern County, California	1,909	79.2	52	2.2	0	0.0	34	1.4	1	0.0	246	10.2	169	7.0	429	17.8	1,776	635	26.3
Block Group 4, Census Tract 54.04, Kern County, California	569	87.5	0	0.0	0	0.0	60	9.2	0	0.0	0	0.0	21	3.2	28	4.3	541	109	16.8
Block Group 1, Census Tract 55.01, Kern County, California	778	81.1	0	0.0	0	0.0	0	0.0	22	2.3	130	13.6	29	3.0	130	13.6	778	181	18.9
Block Group 2, Census Tract 55.01, Kern County, California	402	67.7	0	0.0	0	0.0	0	0.0	81	13.6	13	2.2	98	16.5	16	2.7	402	192	32.3
Block Group 3, Census Tract 55.01, Kern County, California	1,806	94.9	33	1.7	0	0.0	47	2.5	0	0.0	17	0.9	0	0.0	113	5.9	1,710	193	10.1
Block Group 4, Census Tract 55.01, Kern County, California	504	91.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	47	8.5	88	16.0	463	88	16.0

Table 3.8-2
Study Area Race, Ethnicity, and Total Minority, 2010 Estimates

Geographies	White	%	Black/ African American	%	American Indian or Alaska Native	%	Asian	%	Native Hawaiian/ Pacific Islander	%	Some Other Race	%	Two or More Races	%	Hispanic	%	Non-Hispanic White	Total Minority	%
Block Group 5, Census Tract 55.01, Kern County, California	910	98.0	0	0.0	9	1.0	0	0.0	0	0.0	0	0.0	10	1.1	159	17.1	751	178	19.2
Block Group 6, Census Tract 55.01, Kern County, California	996	88.5	0	0.0	94	8.4	0	0.0	0	0.0	0	0.0	35	3.1	71	6.3	941	184	16.4
Block Group 1, Census Tract 89.01, San Bernardino County, California	856	85.0	0	0.0	0	0.0	41	4.1	0	0.0	38	3.8	72	7.1	51	5.1	839	168	16.7
Block Group 2, Census Tract 89.01, San Bernardino County, California	486	93.8	6	1.2	0	0.0	0	0.0	0	0.0	0	0.0	26	5.0	0	0.0	486	32	6.2
Block Group 3, Census Tract 89.01, San Bernardino County, California	1,013	89.3	9	0.8	14	1.2	53	4.7	0	0.0	14	1.2	31	2.7	85	7.5	942	192	16.9
Block Group 1, Census Tract 103, San Bernardino County, California	552	52.1	84	7.9	0	0.0	0	0.0	0	0.0	380	35.8	44	4.2	531	50.1	420	640	60.4
Block Group 1, Census Tract 116, San Bernardino County, California	886	72.0	0	0.0	0	0.0	16	1.3	0	0.0	179	14.6	149	12.1	387	31.5	774	456	37.1

Table 3.8-2
Study Area Race, Ethnicity, and Total Minority, 2010 Estimates

Geographies	White	%	Black/ African American	%	American Indian or Alaska Native	%	Asian	%	Native Hawaiian/ Pacific Islander	%	Some Other Race	%	Two or More Races	%	Hispanic	%	Non-Hispanic White	Total Minority	%
Block Group 1, Census Tract 250, San Bernardino County, California	6,022	66.1	1,425	15.6	100	1.1	393	4.3	376	4.1	471	5.2	320	3.5	2,542	27.9	4,298	4,809	52.8
Block Group Study Area Total	37,341	76.2	3,047	6.2	621	1.3	1,737	3.5	594	1.2	2,885	5.9	2,772	5.7	8,635	17.6	32,446	16,551	33.8
Communities																			
China Lake Acres	1,180	76.0	0	0.0	0	0.0	0	0.0	103	6.6	143	9.2	127	8.2	146	9.4	1,180	373	24.0
Inyokern	1,500	89.5	0	0.0	94	5.6	0	0.0	0	0.0	0	0.0	82	4.9	159	9.5	1,404	272	16.2
Ridgecrest	20,820	76.0	1,523	5.6	370	1.4	1,151	4.2	115	0.4	1,517	5.5	1,890	6.9	4,298	15.7	18,459	8,927	32.6
Counties																			
Inyo County	13,893	75.4	178	1.0	1,884	10.2	260	1.4	13	0.1	1,802	9.8	404	2.2	3,310	18.0	12,442	5,992	32.5
Kern County	537,410	65.9	45,273	5.6	8,367	1.0	32,097	3.9	947	0.1	159,750	19.6	31,849	3.9	388,756	47.7	327,013	488,680	59.9
San Bernardino County	1,219,774	60.8	178,597	8.9	19,575	1.0	123,950	6.2	5,793	0.3	372,794	18.6	84,804	4.2	960,138	47.9	695,292	1,309,995	65.3
State																			
California	22,392,713	61.1	2,246,311	6.1	283,628	0.8	4,747,252	13.0	140,429	0.4	5,448,609	14.9	1,378,348	3.8	13,456,157	36.7	15,107,042	21,530,248	58.8

Source: U.S. Census Bureau 2011.

Table 3.8-3
Housing Units and Housing Tenure, 2000 and 2010 Estimates

Geographies	Housing Units			Housing Tenure – Occupied			Housing Tenure – Vacant		
	2000	2010 Estimate	Annual Average Percentage Change	2000	2010 Estimate	Annual Average Percentage Change	2000	2010 Estimate	Annual Average Percentage Change
Communities									
China Lake Acres	847	800	-0.6%	702	628	-1.1%	145	172	1.9%
Inyokern	519	692	3.3%	418	650	5.6%	101	42	-5.8%
Ridgecrest	11,309	11,687	0.3%	9,826	10,473	0.7%	1,483	1,214	-1.8%
Counties									
Inyo County	9,042	9,433	0.4%	7,703	7,982	0.4%	1,339	1,451	0.8%
Kern County	231,564	278,239	2.0%	208,652	248,057	1.9%	22,912	30,182	3.2%
San Bernardino County	601,369	691,321	1.5%	528,594	596,125	1.3%	72,775	95,196	3.1%
State									
California	12,214,549	13,552,624	1.1%	11,502,870	12,392,852	0.8%	711,679	1,159,772	6.3%

Sources: U.S. Census Bureau 2002b, 2011.

Table 3.8-4
Household Size by Housing Type, 2010 Estimates

Geographies	Average Household Size (All Housing Units)		
	All Housing Units	Owner Occupied	Renter Occupied
Communities			
China Lake Acres CDP, California	2.47	2.36	2.66
Inyokern CDP, California	2.58	2.53	2.76
Ridgecrest City, California	2.57	2.57	2.57
Counties			
Inyo County, California	2.31	2.26	2.39
Kern County, California	3.14	3.10	3.20
San Bernardino County, California	3.29	3.33	3.23
State			
California	2.89	2.97	2.79

CDP = Census-designated place

Source: U.S. Census Bureau 2011.

In the Kern County communities of China Lake Acres, Inyokern, and Ridgecrest, both Inyokern and Ridgecrest mirrored the county trend and experienced growth in the number of housing units, equivalent to an annual average growth rate in housing of about 3.3 and 0.3 percent, respectively, while China Lake Acres experienced a decrease in the number of housing units, at an average rate of about 0.6 percent annually. The number of occupied housing units in Inyokern increased at an annual average rate of 5.6 percent; this rate of increase is more than twice the annual average increase at the county level. The number of occupied housing units also increased slightly in Ridgecrest, at an annual average rate of 0.7 percent. The number and percentage of occupied housing units in China Lake Acres decreased, however, with China Lake Acres experiencing a decrease of about 1.1 percent annually. Inyokern and Ridgecrest differed from the county trend of increasing number of vacant housing units, exhibiting average annual rates of 5.8 percent and 1.8 percent, respectively, while China Lake Acres had a slight increase in vacant housing, with a rate of 1.9 percent.

Information on household size by tenure type is presented in Table 3.8-4 for the state, three counties, and three communities. Across the state, the average household size across all housing units is 2.89; the household size in owner-occupied units is 2.97 and the household size in renter-occupied units is 2.79. Inyo County's average household size in both tenure categories is 2.31, and is lower than all counterpart categories at the state level. The counties of Kern and San Bernardino both have average household sizes that are larger than the state average across all housing units and in both tenure categories, with San Bernardino County averaging larger households in all categories as compared to Kern County.

The Kern County communities of China Lake Acres, Inyokern, and Ridgecrest have lower overall household sizes compared to the state and county. China Lake Acres has the smallest household size of the communities at 2.47 persons per household, and Ridgecrest and Inyokern have higher average household sizes at 2.57 and 2.58, respectively. The size of owner-occupied households is also lower than county and state levels at 2.36, 2.53, and 2.57 for China Lake Acres, Inyokern, and Ridgecrest, respectively. The renter-occupied household sizes of China Lake Acres, Inyokern, and Ridgecrest were smaller than county and state levels at 2.66, 2.76, and 2.57 persons per household, respectively.

3.8.4 Employment, Income, and Economic Activity

Labor force and unemployment information for California; the counties of Inyo, Kern, and San Bernardino; and the communities of China Lake Acres, Inyokern, and Ridgecrest is presented in Table 3.8-5. Growth in the labor force from 2000 to 2010 was seen at the state level at an annual average rate of 1.5 percent in all the counties, although most slowly in Inyo County at 0.9 percent, and in the communities of Inyokern and Ridgecrest. A decrease in the labor force in the community of China Lake Acres occurred at an annual average rate of 1.5 percent.

Growth in the number of persons not in the labor force also occurred at the state level, at an annual average rate of 0.4 percent, but the counties of Kern and San Bernardino both added approximately 1.7 percent and 1.2 percent, respectively, annually to the population not in the labor force, while Inyo County's percentage of persons not in the labor force remained constant. The community of China Lake Acres reduced the number of persons not in the labor force by an average of 0.7 percent per year, which differed from the county's addition of persons not in the labor force at a rate of 1.7 percent annually. The community of Inyokern exceeded the county's rate of growth for those not in the labor force with its annual average growth of 10.5 percent. Although Ridgecrest did experience an increase in the number of persons not in the labor force, the rate of increase was 1.5 percent annually, and was lower than that of Kern County.

Table 3.8-5
Labor Force and Unemployment, 2000 and 2010 Estimates

	In Labor Force			Employed or in Armed Forces			Not in Labor Force			Unemployed				
Geographies	2000	2009	Average Percentage Change	2000	2010	Annual Average Percentage Change	2000	2010	Annual Average Percentage Change	2000	%	2010	%	Annual Average Percentage Change
Communities														
China Lake Acres CDP, California	690	585	-1.5%	690	558	-1.9%	681	630	-0.7%	83	12.0%	27	4.6%	-0.7%
Inyokern CDP, California	432	677	5.7%	441	647	4.7%	324	664	10.5%	34	7.9%	30	4.4%	-0.3%
Ridgecrest City, California	11,986	13,317	1.1%	12,631	11,423	-1.0%	6,668	7,672	1.5%	772	6.4%	1,084	8.1%	0.2%
Counties														
Inyo County, California	8,510	9,275	0.9%	8,510	8,646	0.2%	5,646	5,642	0.0%	503	5.9%	629	6.8%	0.1%
Kern County, California	267,603	355,225	3.3%	271,048	310,995	1.5%	205,949	240,018	1.7%	31,697	11.8%	40,115	11.3%	-0.1%
San Bernardino County, California	735,589	940,945	2.8%	749,993	823,910	1.0%	478,779	538,565	1.2%	59,913	8.1%	103,341	11.0%	0.3%
State														
California	15,977,879	18,418,306	1.5%	16,126,556	16,632,466	0.3%	9,618,265	10,027,279	0.4%	1,110,274	7.0%	1,642,405	8.9%	0.2%

CDP = Census-designated place

Sources: U.S. Census Bureau 2002b, 2011.

The percentage of persons employed by or in the Armed Forces increased slightly by 0.3 percent annually at the state level, while the number of persons in this category grew more quickly in the counties of Kern and San Bernardino, which increased by approximately 1.5 and 1.0 percent annually. Inyo County's population of persons employed by or in the Armed Forces only increased at an annual average rate of 0.2 percent. In the communities, only Inyokern shared Kern County's trend of an increase in employment, with an annual average increase of 4.7 percent, while China Lake Acres and Ridgecrest each experienced a drop in persons employed by and in the Armed Forces, at respective annual average rates of -1.9 percent and -1.0 percent.

Unemployment increased at the state level from approximately 7.0 percent in 2000 to 8.9 percent in 2010, which is an annual average increase of about 0.2 percent. These trends were mirrored by Inyo and San Bernardino counties, where increases in unemployment were also seen, although the rate of increase and the total percentage of unemployed was larger in San Bernardino County than in Inyo County or at the state level. Kern County experienced a low annual average decrease in unemployment of about 0.1 percent annually, although this decrease in unemployment still left the county with a higher unemployment rate than either of the other counties or the state. Despite the unemployment levels overall in Kern County, China Lake Acres, Inyokern, and Ridgecrest all had lower unemployment rates in 2010 than the county, with rates of 4.6 percent, 4.4 percent, and 8.1 percent, respectively. However, while China Lake Acres and Inyokern experienced respective annual average decreases in unemployment of about 0.7 percent and 0.4 percent, Ridgecrest's annual average unemployment rate increase was 0.2 percent.

As these data are based on the U.S. Census American Community Survey (U.S. Census Bureau 2011), and represent a statistical estimate based on surveys conducted from 2006 to 2010, the effect of the economic recession of the late 2000s (and its effect on employment) is not fully captured. More recent data from the California Employment Development Department (EDD) show that the unemployment rates for California and the counties of Inyo, Kern, and San Bernardino were 10.9 percent, 9.1 percent, 13.4 percent, and 12.1 percent, respectively, in November 2011, which was the most recent data available (EDD 2011). The unemployment rate for Ridgecrest was 7.7 percent, and the unemployment rates for Inyokern and China Lake Acres were 8.2 percent and 13.2 percent, respectively (EDD 2011).

Table 3.8-6 contains information on employment by occupational sector in the state, three counties, and three communities. The employment sectors examined were management, business, science, and art; service; sales and office; natural resources, construction, and maintenance; and production, transportation, and material moving. Across the state, the largest percentage of employment in the sectors examined was in the management sector, at 36.2 percent; followed by the sales and office sector at 25.4 percent; the service sector at 17.4 percent; the production, transportation, and material moving sector at 11.1 percent; and natural resources, construction, and maintenance at 9.9 percent. In Inyo County, the sales and office sector was the largest at 28.9 percent, followed by the management sector at 25.7 percent, then the service sector at 23.4 percent. In Kern County, the top three employment sectors were management, sales, and the natural resources, construction, and maintenance sectors. San Bernardino County's top three employment sectors were also the same as the state's sectors, with the natural resources, construction, and maintenance sector composing the smallest share of employment.

In China Lake Acres, the largest employment sectors were sales and office at 28.0 percent; management and business at 26.2 percent; and natural resources, construction, and maintenance at 23.7 percent. In the community of Inyokern, the top three employment sectors were service at 34.0 percent; management and business at 23.6 percent; and natural resources, construction, and maintenance at 19.6 percent. In Ridgecrest, the management and business, sales and office, and service sectors were the largest employment sectors, at 41.6 percent, 22.8 percent, and 15.5 percent, respectively.

Table 3.8-6
Employment by Occupation, 2010 Estimates

Geographies	Management and Professional		Service		Sales and Office		Farming, Fishing, and Forestry		Construction, Extraction, and Maintenance		Production, Transportation, and Material Moving	
	#	%	#	%	#	%	#	%	#	%	#	%
Communities												
China Lake Acres CDP, California	146	26.2%	50	9.0%	156	28.0%	132	23.7%	74	13.3%	146	26.2%
Inyokern CDP, California	153	23.6%	220	34.0%	97	15.0%	127	19.6%	50	7.7%	153	23.6%
Ridgecrest City, California	4,757	41.6%	1,771	15.5%	2,601	22.8%	1,131	9.9%	1,163	10.2%	4,757	41.6%
Counties												
Inyo County, California	2,223	25.7%	2,019	23.4%	2,500	28.9%	1,082	12.5%	822	9.5%	2,223	25.7%
Kern County, California	80.987	26.0%	57,807	18.6%	70,939	22.8%	61,927	19.9%	39,335	12.6%	80.987	26.0%
San Bernardino County, California	229,462	27.9%	146,541	17.8%	222,528	27.0%	96,278	11.7%	129,101	15.7%	229,462	27.9%
State												
California	6,022,109	36.2%	2,897,320	17.4%	4,221,411	25.4%	1,651,688	9.9%	1,839,938	11.1%	6,022,109	36.2%

CDP = Census-designated place
Source: U.S. Census Bureau 2011.

Information on per capita income and median household income in the study area is presented in Table 3.8-7. Although per capita income across the state was $29,188, per capita incomes in all three counties and all three communities were below this level. Of the three counties examined, per capita income was highest in Inyo County, at $26,762; the counties of Kern and San Bernardino had per capita incomes of $20,100 and $21,867, respectively. The three communities examined all had per capita income levels that were higher than the Kern County average. At $21,557, China Lake Acres had a lower per capita income than both Inyokern and Ridgecrest, which had per capita incomes of $23,508 and $26,825, respectively.

Table 3.8-7
Per Capita and Median Household Income, 2010 Estimates

Geographies	Per Capita Income	Median Household Income
Communities		
China Lake Acres CDP, California	$21,557	$35,102
Inyokern CDP, California	$23,508	$31,925
Ridgecrest City, California	$26,825	$57,693
Counties		
Inyo County, California	$26,762	$44,808
Kern County, California	$20,100	$47,089
San Bernardino County, California	$21,867	$55,845
State		
California	$29,188	$60,883

CDP = Census-designated place
Source: U.S. Census Bureau 2011.

Median household income information is presented in Table 3.8-7, which was $60,883 at the state level. In all three counties in the study area, median household income was lower than the state median. Median household income was $44,808 and $47,089 in the counties of Inyo and Kern, but higher in San Bernardino County at $55,845. In two of the Kern County communities examined, median income was lower than the county level at $35,102 in China Lake Acres and $31,925 in Inyokern, while Ridgecrest was higher than the county level at $57,693.

The existing payroll at NAWSCL is approximately $315 million, with 4,793 military and civilian personnel directly employed by NAWSCL. In Table 3.8-8, the economic impact of NAWSCL during fiscal year 2009 is summarized by its effects on industrial output, employment, labor income, federal taxes, and state/local taxes. During fiscal year 2009, NAWSCL payroll, operations, and detachments/transients resulted in $455.9 million of industrial output, with operations accounting for the largest share at $260.7 million.

Operations also accounted for 2,238 jobs—the largest share of jobs—while payroll followed with 1,586 jobs, and detachments/transients accounted for 138 jobs in the NAWSCL region. These 3,962 jobs, combined with the 4,793 military and civilian personnel directly employed by NAWSCL, results in a grand total of 8,760 jobs.

Table 3.8-8
Economic Impact of NAWSCL, Fiscal Year 2009

	Economic Impact Measure			Tax Revenues		
Impact Sources	Industrial Output ($ millions)	Employment (No. of jobs)	Labor Income ($ millions)	Federal ($ millions)	State/Local ($ millions)	Total Taxes ($ millions)
Payroll	$184.6	1,586	$57.2	$12.3	$15.4	$27.7
Operations (Contracts)	$260.7	2,238	$121.4	$19.4	$11.1	$30.5
Detachments/Transients	$10.6	138	$3.7	$0.7	$0.7	$1.9
Total	$455.9	3,962	$182.3	$32.4	$27.2	$60.1

Source: U.S. Navy 2011e.

Total labor income of $182.3 million resulted from NAWSCL, of which operations, payroll, and detachments/transients contributed $121.4 million, $57.2 million, and $3.7 million, respectively. Although the economic impact of transients, who include members of training detachments, contractors, and military and civilian visitors to the Installation, and detachments, who include retired and disabled veterans, in the NAWSCL area is smaller than the impacts resulting from operations and payroll, the expenditures in this category are very important, as they play a major role in sustaining economic activity in the communities that surround NAWSCL.

In terms of taxes, NAWSCL activities resulted in $60.1 million in federal, state, and local taxes. Operation, payroll, and detachments/transients resulted in $30.5 million, $27.7 million, and $1.9 million, respectively, of total tax revenue in fiscal year 2009. Operations activity resulted in the largest share of federal taxes at $19.4 million, while payroll activity resulted in the largest share of state and local tax activity at $15.4 million.

3.8.5 Environmental Justice

EO 12898, 59 Federal Register 7629, Federal Action to Address Environmental Justice in Minority Population and Low-Income Populations, directs federal agencies to “make achieving environmental justice part of its mission by identifying and addressing … disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority population and low-income population.” The goal of this EO is to prevent low-income and minority communities from being subject to disproportionately adverse environmental effects.

EO 13045, Protection of Children from Environmental Health Risks and Safety Risks, was signed by President Clinton on April 21, 1997, and directs federal agencies to “make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children, and to ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.” Under the definitions provided in EO 13045, covered regulatory actions include those that may be “economically significant” (under EO 12866) and “concern an environmental health risk or safety risk that an agency has reason to believe may disproportionately affect children.”

To identify possible disproportionately adverse environmental effects, the following sections provide information on the race and ethnicity of populations near the project area, as well as economic status. This section seeks to identify the presence of minority and low-income populations, and to provide context on their presence in the region to inform decision-making in the project area. For this section, the

environmental justice community is composed of the same areas as the socioeconomic investigation, which consists of the counties of Inyo, Kern, and San Bernardino; the communities of China Lake Acres, Inyokern, and Ridgecrest; and 33 Census block groups within the counties that surround NAWSCL.

3.8.5.1 Minority Populations

As discussed above and illustrated in Figure 3.8-1 and Table 3.8-9, Kern and San Bernardino counties have higher minority and Hispanic populations than the state overall, while Inyo County has both fewer minorities and fewer Hispanic residents than the state average. The communities of China Lake Acres, Inyokern, and Ridgecrest also have smaller shares of Hispanic and minority populations than both the state and Kern County. Finally, on average, the block groups and tract areas examined across the three counties most closely reflected the demographic composition of Ridgecrest, with a 17.6 percent Hispanic population and 33.8 percent total minority population.

3.8.5.2 Low-Income Populations

Figure 3.8-2 and Table 3.8-9 present data on poverty in the vicinity of NAWSCL in terms of the poverty ratio, which indexes income to the poverty level. In this system, an income of between 0.5 and 1 indicates an income of between 50 percent and 100 percent of the U.S. Census Bureau's defined poverty thresholds, which was $22,113 in 2010 for a family of four. In California, 67.4 percent of the population for whom poverty status was determined had incomes of at least twice the poverty level, while 13.7 percent of the population had income below the poverty level, with 5.7 percent at less than half of the poverty level. An additional 19.2 percent of the state population earned between one and two times the poverty level.

In Inyo County, 69.6 percent of the population earned more than twice the poverty level, while San Bernardino and Kern counties had lower shares of population earning at this level, with 63.4 percent and 54.4 percent, respectively. Inyo County had the lowest percentage of population living at less than half of the poverty level with 4.8 percent, while Kern County had the greatest share at 8.3 percent, and San Bernardino was located between these extremes with 6.4 percent. Kern County had the highest percentage of population living below the poverty level at 20.6 percent, followed by San Bernardino County at 14.9 percent, and Inyo County at 11.9 percent.

In the communities examined, Ridgecrest had the highest percentage of population earning incomes of more than twice the poverty level with 69.2 percent—a few percentage points higher than the state average for this category—followed by Inyokern with 62.7 percent and China Lake Acres with 47.6 percent. In this category, only Ridgecrest had a higher percentage of population earning more than twice the poverty level of the state. Ridgecrest had the highest percentage of population earning less than half of the poverty level at 5.6 percent, which is less than the percentage of population in this category at the county level. In Inyokern and China Lake Acres, 3.2 percent and 2.8 percent of the population earned less than half of the poverty level.

In the Inyo County block groups examined, the percentages of population living below the poverty line were similar to those at the county level, and the percentage of population earning more than twice the poverty level was also near to that seen at the county level. The Kern County block groups examined had a lower average percentage of population living below the poverty level than the county in general, although some individual block groups exhibited concentrations of people living in poverty. Of the Kern County block groups, Block Groups 53.00.2 and 54.03.5 had the highest percentages of population living at less than half of the poverty level at 19.4 percent; Block Group 54.01.4 had 97.1 percent of the population earning more than twice the poverty level.

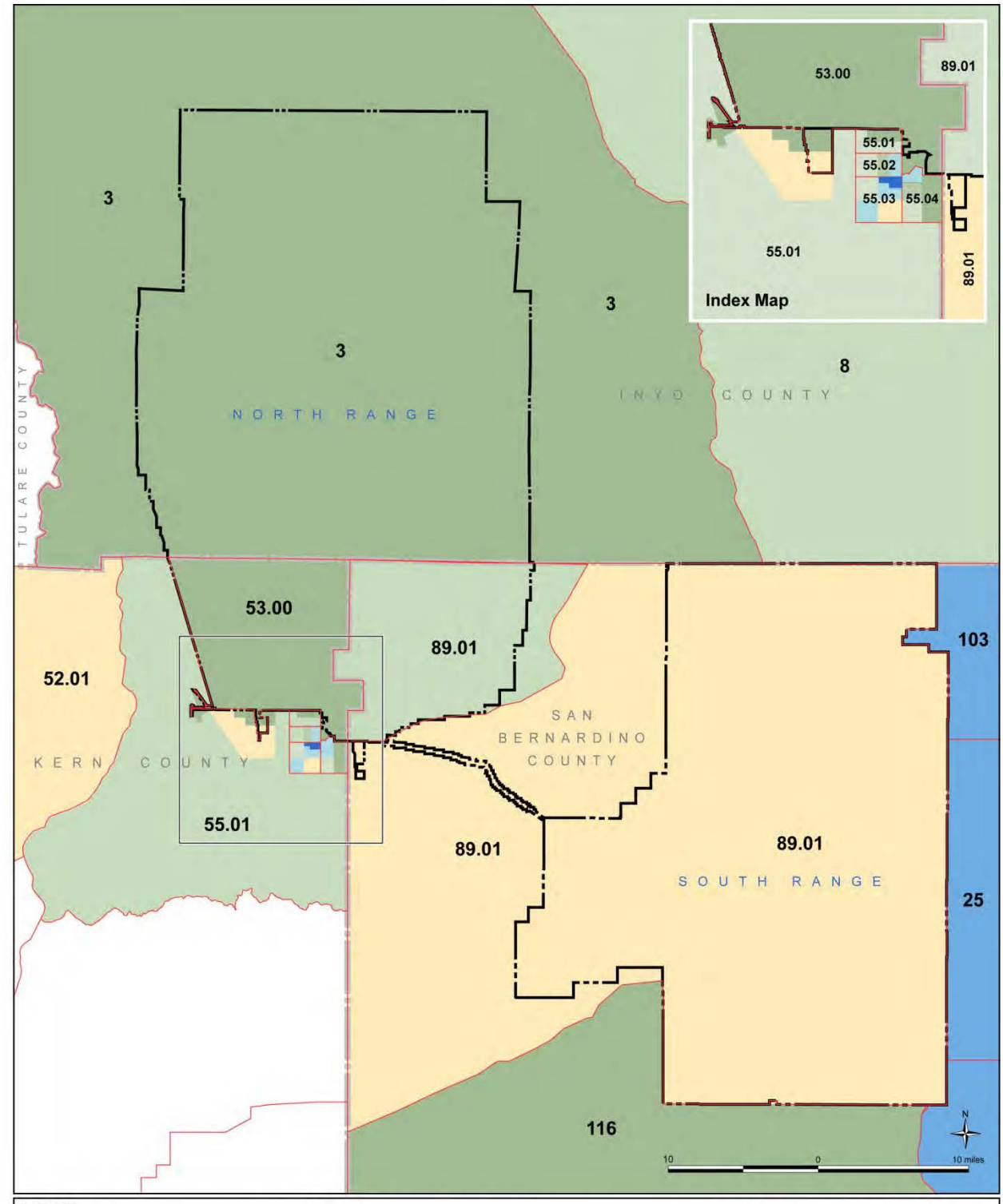

53.00
89.01
55.01
55.02
55.03
55.04
55.01
89.01
Index Map
3
3
3
NORTH RANGE
8
INYO COUNTY
TULARE COUNTY
53.00
89.01
103
52.01
SAN BERNARDINO COUNTY
KERN COUNTY
55.01
89.01
89.01
SOUTH RANGE
25
116
N
10
0
10 miles
LEGEND
55.04 Census Tract Boundary and ID
Installation Boundary
County Boundary
% Total Minority
0% - 10%
10% - 20%
20% - 30%
30% - 40%
40% - 50%
> 50%
CHINALAKEEIS/064a
Total Minority Percentage
NAWSCL
Figure 3.8-1

Table 3.8-9
Poverty Ratios, 2010 Estimates
(Page 1 of 4)

Geographies	Under 0.50		0.50 to 0.99		1.00 to 1.49		1.50 to 1.99		2.00 and Over					
	#	%	#	%	#	%	#	%	#	%				
Block Groups														
Block Group 1, Census Tract 8, Inyo County, California	10	2.6%	26	6.6%	38	9.7%	47	12.0%	271	69.1%				
Block Group 2, Census Tract 8, Inyo County, California	39	7.0%	34	6.1%	85	15.2%	29	5.2%	371	66.5%				
Block Group 2, Census Tract 52.01, Kern County, California	0	0.0%	0	0.0%	62	23.0%	114	42.2%	94	34.8%				
Block Group 1, Census Tract 53, Kern County, California	0	0.0%	0	0.0%	38	5.4%	215	30.5%	453	64.2%				
Block Group 2, Census Tract 53, Kern County, California	250	19.4%	201	15.6%	221	17.2%	149	11.6%	467	36.3%				
Block Group 1, Census Tract 54.01, Kern County, California	138	15.0%	200	21.8%	34	3.7%	223	24.3%	323	35.2%				
Block Group 2, Census Tract 54.01, Kern County, California	137	6.2%	199	9.0%	239	10.8%	455	20.6%	1,174	53.3%				
Block Group 3, Census Tract 54.01, Kern County, California	0	0.0%	0	0.0%	86	7.9%	13	1.2%	994	90.9%				
Block Group 4, Census Tract 54.01, Kern County, California	34	2.9%	0	0.0%	0	0.0%	0	0.0%	1,145	97.1%				
Block Group 5, Census Tract 54.01, Kern County, California	18	1.9%	50	5.2%	27	2.8%	46	4.8%	819	85.3%				

Table 3.8-9
Poverty Ratios, 2010 Estimates
(Page 2 of 4)

	Under 0.50	0.50 to 0.99	1.00 to 1.49	1.50 to 1.99	2.00 and Over					
Geographies	**#**	**%**	**#**	**%**	**#**	**%**	**#**	**%**	**#**	**%**
Block Groups										
Block Group 1, Census Tract 54.02, Kern County, California	328	16.0%	176	8.6%	266	13.0%	47	2.3%	1,228	60.0%
Block Group 2, Census Tract 54.02, Kern County, California	0	0.0%	94	7.1%	25	1.9%	40	3.0%	1,165	88.0%
Block Group 3, Census Tract 54.02, Kern County, California	10	0.7%	56	3.7%	100	6.7%	211	14.1%	1,121	74.8%
Block Group 1, Census Tract 54.03, Kern County, California	37	3.0%	0	0.0%	138	11.3%	99	8.1%	944	77.5%
Block Group 2, Census Tract 54.03, Kern County, California	123	4.8%	183	7.1%	185	7.2%	173	6.7%	1,902	74.1%
Block Group 3, Census Tract 54.03, Kern County, California	22	2.1%	0	0.0%	28	2.6%	32	3.0%	982	92.3%
Block Group 4, Census Tract 54.03, Kern County, California	46	3.1%	56	3.8%	273	18.6%	90	6.1%	1,003	68.3%
Block Group 5, Census Tract 54.03, Kern County, California	201	19.4%	182	17.5%	289	27.8%	80	7.7%	286	27.6%
Block Group 1, Census Tract 54.04, Kern County, California	16	1.5%	16	1.5%	199	18.4%	90	8.3%	758	70.3%
Block Group 2, Census Tract 54.04, Kern County, California	112	4.7%	326	13.6%	78	3.2%	219	9.1%	1,668	69.4%

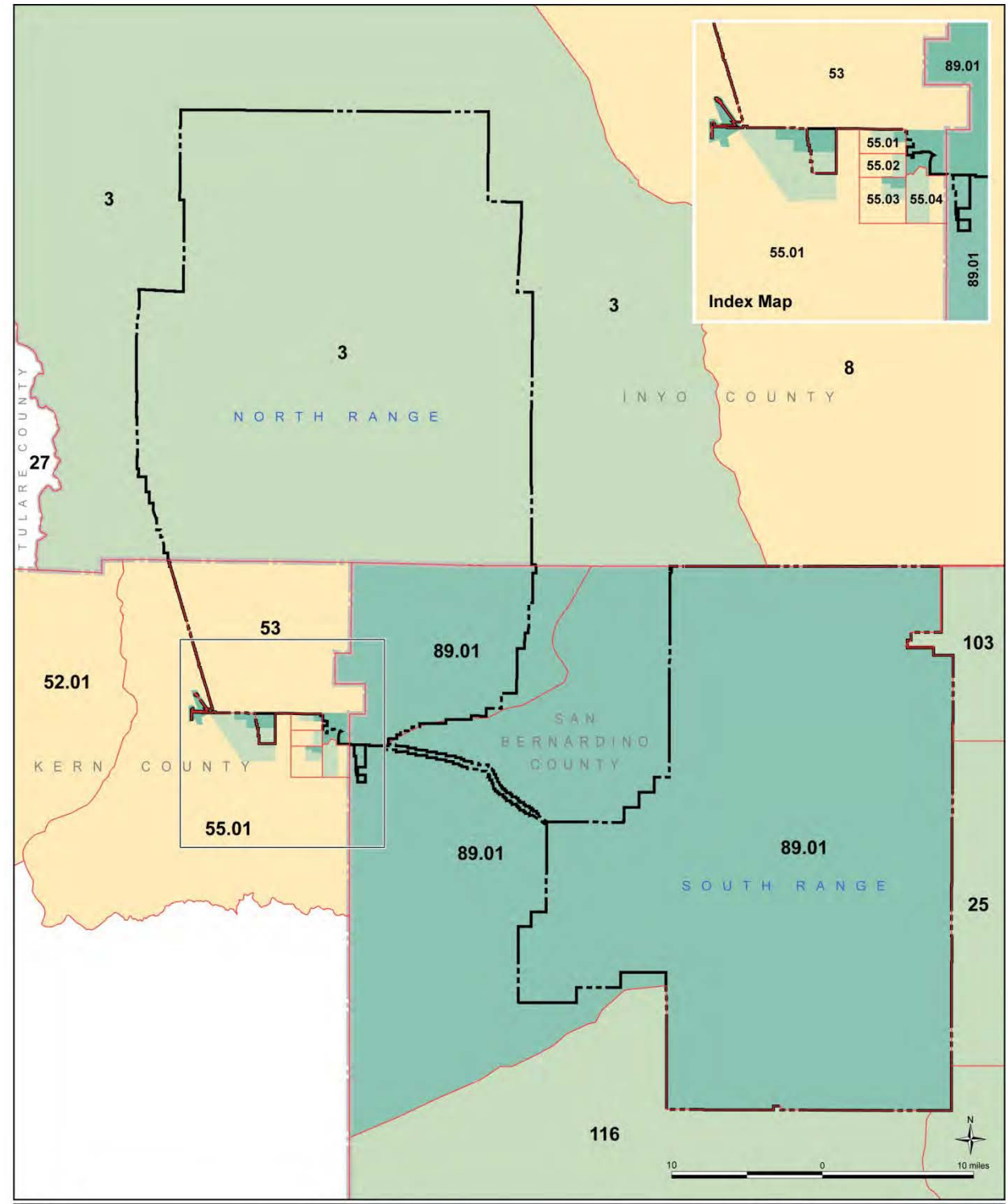
Table 3.8-9
Poverty Ratios, 2010 Estimates
(Page 3 of 4)

	Under 0.50	0.50 to 0.99	1.00 to 1.49	1.50 to 1.99	2.00 and Over					
Geographies	#	%	#	%	#	%	#	%	#	%
Block Groups										
Block Group 3, Census Tract 54.04, Kern County, California	54	2.2%	223	9.2%	173	7.2%	153	6.3%	1,808	75.0%
Block Group 4, Census Tract 54.04, Kern County, California	0	0.0%	85	13.1%	74	11.4%	9	1.4%	482	74.2%
Block Group 1, Census Tract 55.01, Kern County, California	15	1.6%	193	20.1%	0	0.0%	256	26.7%	495	51.6%
Block Group 2, Census Tract 55.01, Kern County, California	28	4.7%	182	30.6%	79	13.3%	61	10.3%	244	41.1%
Block Group 3, Census Tract 55.01, Kern County, California	52	2.7%	130	6.8%	50	2.6%	0	0.0%	1,667	87.8%
Block Group 4, Census Tract 55.01, Kern County, California	24	5.2%	105	22.8%	160	34.7%	0	0.0%	172	37.3%
Block Group 5, Census Tract 55.01, Kern County, California	71	7.6%	0	0.0%	0	0.0%	38	4.1%	820	88.3%
Block Group 6, Census Tract 55.01, Kern County, California	26	2.3%	83	7.4%	43	3.8%	151	13.4%	822	73.1%
Block Group 1, Census Tract 89.01, San Bernardino County, California	347	34.5%	104	10.3%	87	8.6%	38	3.8%	431	42.8%

Table 3.8-9
Poverty Ratios, 2010 Estimates
(Page 4 of 4)

	Under 0.50	0.50 to 0.99	1.00 to 1.49	1.50 to 1.99	2.00 and Over					
Geographies	#	%	#	%	#	%	#	%	#	%
Block Groups										
Block Group 2, Census Tract 89.01, San Bernardino County, California	17	3.3%	116	22.4%	37	7.1%	0	0.0%	348	67.2%
Block Group 3, Census Tract 89.01, San Bernardino County, California	67	5.9%	131	11.6%	72	6.3%	85	7.5%	779	68.7%
Block Group 1, Census Tract 103, San Bernardino County, California	72	8.7%	87	10.5%	37	4.5%	233	28.1%	401	48.3%
Block Group 1, Census Tract 116, San Bernardino County, California	226	18.4%	41	3.3%	34	2.8%	601	48.9%	328	26.7%
Block Group 1, Census Tract 250, San Bernardino County, California	34	0.4%	768	9.7%	597	7.6%	1,487	18.8%	5,018	63.5%
Block Group Study Area Total	2,554	5.4%	4,047	8.6%	3,854	8.2%	5,484	11.7%	30,983	66.0%
Communities										
China Lake Acres CDP, California	43	2.8%	375	24.1%	79	5.1%	317	20.4%	739	47.6%
Inyokern CDP, California	50	3.2%	188	11.9%	203	12.8%	151	9.5%	994	62.7%
Ridgecrest City, California	1,514	5.6%	2,031	7.6%	2,376	8.9%	2,344	8.7%	18,569	69.2%
Counties										
Inyo County, California	870	4.8%	1,308	7.1%	1,468	8.0%	1,919	10.5%	12,743	69.6%
Kern County, California	64,198	8.3%	95,769	12.3%	107,251	13.8%	87,418	11.2%	422,986	54.4%
San Bernardino County, California	125,286	6.4%	165,734	8.5%	222,283	11.3%	204,116	10.4%	1,243,825	63.4%
State										
California	2,057,365	5.7%	2,862,580	8.0%	3,534,507	9.9%	3,325,057	9.3%	24,097,527	67.2%

Source: U.S. Census Bureau 2011.



Percentage of Low-Income Residents NAWSCL

Figure 3.8-2

The San Bernardino block groups examined contained widely differing percentages of population living below the poverty line in relation to each other, the county, and the state. Block Group 250.00.1 had the lowest percentage of population living below the poverty line at 10.1 percent, while Block Group 89.01.1 had 44.8 percent of the population in this category. Percentages in the category of population earning more than twice the poverty level ranged from 26.7 percent for Block Group 116.00.1 to 68.7 percent for Block Group 89.01.3.

3.8.5.3 Child Populations

Figure 3.8-3 and Table 3.8-10 display information on children, defined as persons younger than 18 years of age. California has 25.5 percent of its population younger than 18 years. In relation to the state, Inyo County has a lower overall percentage of children, at 21.9 percent. Both Kern and San Bernardino counties have a higher percentage of total population who are children, with 30.6 percent and 30.0 percent, respectively.

In the community of China Lake Acres, the overall number of children as a percentage of the population was 21.8 percent, which is about 9 percent lower than the levels seen across Kern County. In Inyokern and Ridgecrest, children as a percentage of the population were also lower than at the county level.

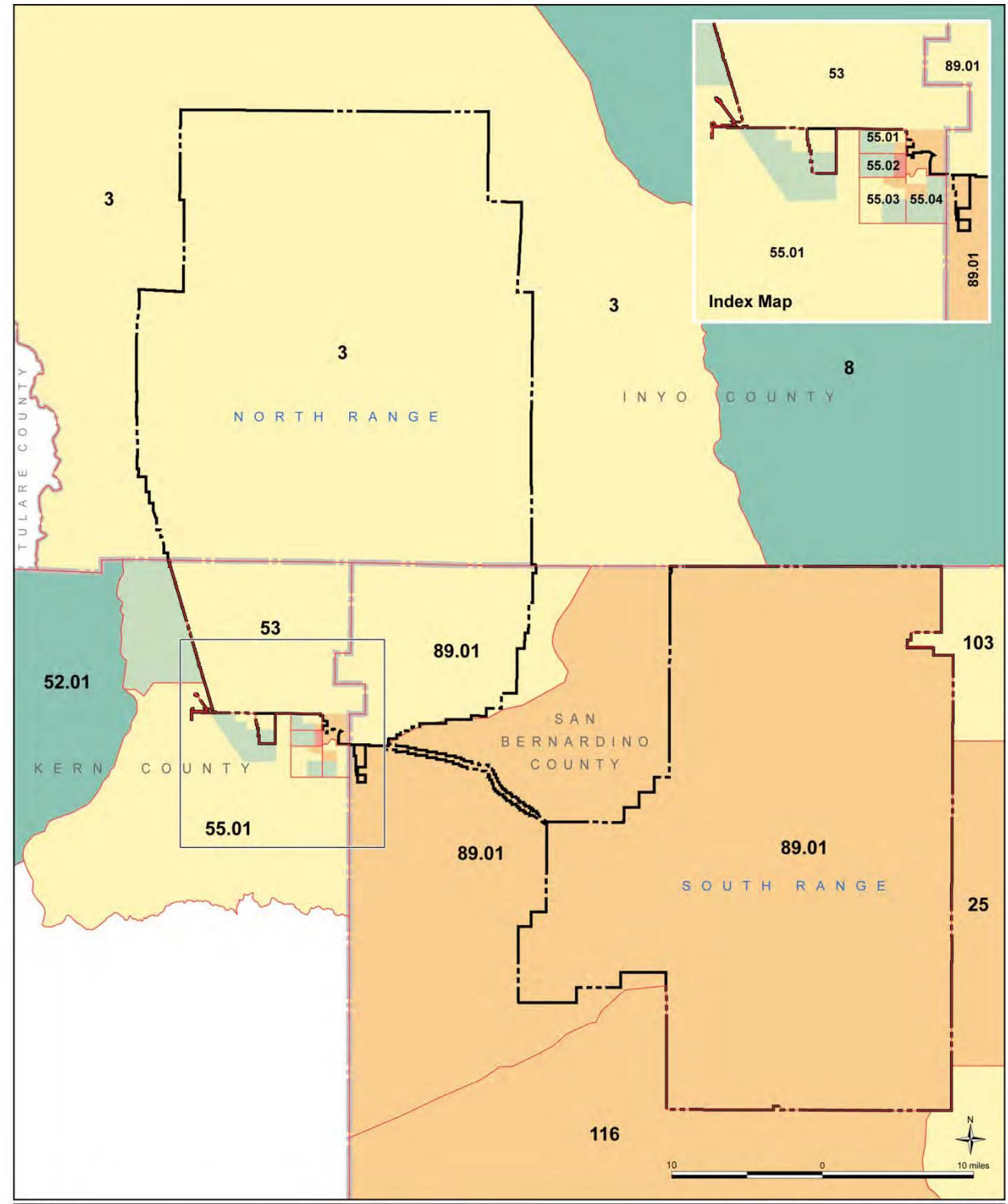
Child-Oriented Facilities

The type, number, and location of schools, daycare facilities, parks, and recreational facilities in the project area are discussed in this section.

Within 1 mile (1.6 kilometers) of NAWSCL mainsite there are four schools: Murray Middle School, Richmond Elementary School, Pierce Elementary School, and Burroughs High School. Murray Middle School and Richmond Elementary School are located within the fence line of NAWSCL. Pierce Elementary School and Burroughs High School are situated outside adjacent to the fence line. Within 2 miles (3.2 kilometers), there is one other high school (Mesquite Continuation High School), one elementary school (Las Flores), Immanuel Christian School offering kindergarten to 12th grade, and a private preschool (Heritage Montessori). Immanuel Christian School and Mesquite Continuation High School are located off of North China Lake Boulevard. A radius of 5.5 miles (8.8 kilometers) from NAWSCL captures all of the schools for children in the Ridgecrest area, the balance of which consists of six religious schools, one charter school, one middle school, and two elementary schools. Most of these schools are located off of either Norma Avenue or West Upjohn Avenue.

There are also seven state-licensed childcare/preschool facilities in Ridgecrest, two of which are not affiliated with any of the schools listed above, and two small non-licensed facilities. In addition, NAWSCL also provides to eligible families childcare through the Child Development Center/Child Development Home, and provides child development and recreation through several programs targeted at specific age groups: Kinderooz for pre-school children; Movin' On Up for school-age children; and Castle X, a youth and sports center, for teens. Other recreational facilities used by children are James M. Pearson Memorial Park, Kern County Regional Park, Stauffer Park, Hellmers Park, Upjohn Park, and Desert Empire Fair Park. Of these parks, Kern County Regional, Hellmers, and Stauffer have schools located nearby. The Kerr-McGee Community Center provides a gymnasium, recreational equipment, and sports fields; Leroy Jackson Park Sports Complex provides sports fields; Ridgecrest Skate Park provides access to a skateboarding area; and Sgt. John Pinney Memorial Pool provides aquatic recreation opportunities.

There are no schools or parks in China Lake Acres. In Inyokern, there are two private schools offering kindergarten through twelfth grade, and one public elementary school. Inyokern Elementary School also has a state-licensed childcare/preschool facility. Both of the other private schools are located outside of central Inyokern to the south, with access off of Brown Road. Inyokern Park is the only park in the community, and is located near Inyokern Elementary School.



Percentage of Children NAWSCL

Figure 3.8-3

Table 3.8-10
Child Population, 2010 Estimates
(Page 1 of 4)

	Age Groups									
	0–4		5–9		10–14		15–17		Total	
Geographies	#	%	#	%	#	%	#	%	#	%
Block Groups										
Block Group 1, Census Tract 8, Inyo County, California	4	1.0%	9	2.3%	9	2.3%	0	0.0%	22	5.6%
Block Group 2, Census Tract 8, Inyo County, California	14	2.5%	42	7.5%	64	11.5%	30	5.4%	150	26.9%
Block Group 2, Census Tract 52.01, Kern County, California	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Block Group 1, Census Tract 53, Kern County, California	115	10.6%	85	7.9%	40	3.7%	69	6.4%	309	28.6%
Block Group 2, Census Tract 53, Kern County, California	190	14.7%	84	6.5%	115	8.9%	35	2.7%	424	32.8%
Block Group 1, Census Tract 54.01, Kern County, California	85	9.3%	95	10.3%	77	8.4%	15	1.6%	272	29.6%
Block Group 2, Census Tract 54.01, Kern County, California	134	6.1%	120	5.4%	133	6.0%	121	5.5%	508	23.0%
Block Group 3, Census Tract 54.01, Kern County, California	97	8.4%	129	11.2%	59	5.1%	60	5.2%	345	30.0%
Block Group 4, Census Tract 54.01, Kern County, California	38	3.1%	30	2.5%	74	6.1%	63	5.2%	205	16.9%
Block Group 5, Census Tract 54.01, Kern County, California	0	0.0%	51	5.3%	51	5.3%	57	5.9%	159	16.6%
Block Group 1, Census Tract 54.02, Kern County, California	237	11.3%	203	9.7%	249	11.9%	152	7.3%	841	40.2%
Block Group 2, Census Tract 54.02, Kern County, California	102	7.7%	19	1.4%	31	2.3%	78	5.9%	230	17.4%

Table 3.8-10
Child Population, 2010 Estimates
(Page 2 of 4)

	Age Groups									
	0–4		5–9		10–14		15–17		Total	
Geographies	#	%	#	%	#	%	#	%	#	%
Block Groups										
Block Group 3, Census Tract 54.02, Kern County, California	51	3.4%	140	9.3%	63	4.2%	36	2.4%	290	19.4%
Block Group 1, Census Tract 54.03, Kern County, California	73	6.0%	80	6.6%	75	6.2%	42	3.4%	270	22.2%
Block Group 2, Census Tract 54.03, Kern County, California	193	7.4%	135	5.2%	260	10.0%	59	2.3%	647	24.9%
Block Group 3, Census Tract 54.03, Kern County, California	0	0.0%	22	2.1%	87	8.2%	93	8.7%	202	19.0%
Block Group 4, Census Tract 54.03, Kern County, California	34	2.3%	133	9.1%	147	10.0%	114	7.8%	428	29.2%
Block Group 5, Census Tract 54.03, Kern County, California	159	15.3%	53	5.1%	94	9.1%	22	2.1%	328	31.6%
Block Group 1, Census Tract 54.04, Kern County, California	46	4.3%	60	5.6%	37	3.4%	72	6.7%	215	19.9%
Block Group 2, Census Tract 54.04, Kern County, California	251	10.4%	131	5.5%	198	8.2%	112	4.7%	692	28.8%
Block Group 3, Census Tract 54.04, Kern County, California	212	8.8%	200	8.3%	240	10.0%	279	11.6%	931	38.6%
Block Group 4, Census Tract 54.04, Kern County, California	0	0.0%	35	5.4%	8	1.2%	65	10.0%	108	16.6%
Block Group 1, Census Tract 55.01, Kern County, California	66	6.9%	117	12.2%	54	5.6%	19	2.0%	256	26.7%
Block Group 2, Census Tract 55.01, Kern County, California	47	7.9%	35	5.9%	0	0.0%	0	0.0%	82	13.8%

Table 3.8-10
Child Population, 2010 Estimates
(Page 3 of 4)

	Age Groups									
	0–4		5–9		10–14		15–17		Total	
Geographies	#	%	#	%	#	%	#	%	#	%
Block Groups										
Block Group 3, Census Tract 55.01, Kern County, California	53	2.8%	155	8.1%	120	6.3%	151	7.9%	479	25.2%
Block Group 4, Census Tract 55.01, Kern County, California	0	0.0%	45	8.2%	89	16.2%	0	0.0%	134	24.3%
Block Group 5, Census Tract 55.01, Kern County, California	62	6.7%	42	4.5%	42	4.5%	10	1.1%	156	16.8%
Block Group 6, Census Tract 55.01, Kern County, California	57	5.1%	55	4.9%	89	7.9%	44	3.9%	245	21.8%
Block Group 1, Census Tract 89.01, San Bernardino County, California	144	14.3%	58	5.8%	19	1.9%	24	2.4%	245	24.3%
Block Group 2, Census Tract 89.01, San Bernardino County, California	27	5.2%	30	5.8%	64	12.4%	46	8.9%	167	32.2%
Block Group 3, Census Tract 89.01, San Bernardino County, California	62	5.5%	57	5.0%	74	6.5%	69	6.1%	262	23.1%
Block Group 1, Census Tract 103, San Bernardino County, California	85	8.0%	64	6.0%	53	5.0%	49	4.6%	251	23.7%
Block Group 1, Census Tract 116, San Bernardino County, California	74	6.0%	83	6.7%	107	8.7%	180	14.6%	444	36.1%
Block Group 1, Census Tract 250, San Bernardino County, California	1,897	20.8%	989	10.9%	525	5.8%	128	1.4%	3,539	38.9%
Block Group Study Area Total	4,609	9.4%	3,586	7.3%	3,347	6.8%	2,294	4.7%	13,836	28.2%

Table 3.8-10
Child Population, 2010 Estimates
(Page 4 of 4)

	Age Groups									
	0–4		5–9		10–14		15–17		Total	
Geographies	#	%	#	%	#	%	#	%	#	%
Block Groups										
Communities										
China Lake Acres	113	7.3%	152	9.8%	54	3.5%	19	1.2%	338	21.8%
Inyokern	57	3.4%	100	6.0%	178	10.6%	44	2.6%	379	22.6%
Ridgecrest	2,021	7.4%	1,877	6.9%	2,049	7.5%	1,503	5.5%	7,450	27.2%
Counties										
Inyo County	1,060	5.8%	986	5.3%	1,176	6.4%	818	4.4%	4,040	21.9%
Kern County	71,484	8.8%	65,801	8.1%	68,590	8.4%	43,758	5.4%	249,633	30.6%
San Bernardino County	159,893	8.0%	158,132	7.9%	171,149	8.5%	111,482	5.6%	600,656	30.0%
State										
California	2,545,065	6.9%	2,483,443	6.8%	2,609,028	7.1%	1,687,793	4.6%	9,325,329	25.5%

South of Ridgecrest is Cerro Coso Community College offering a wide variety of educational opportunities. High school seniors and juniors, and special category students in grades K–10 who qualify may be admitted as special students at the college upon the recommendation of their school principal and with the approval of the Vice President of Student Services or extension administrator. Also located at the college and available to the community is the Child Development Center serving children from 3 months to the start of kindergarten.

Children with special needs within the ROI also may be eligible to receive services from Kern Regional Center and/or Desert Area Resources and Training, both of which are located in Ridgecrest.

3.9 UTILITIES AND PUBLIC SERVICES

3.9.1 Region of Influence

The ROI for utilities and public services includes NAWSCL and the surrounding local service areas that provide utilities and public services to the Installation.

3.9.2 Current Management Practices

Utilities and public services are subject to federal and state regulations; local municipal codes; permitting requirements; legislation; and federal, state, and local agency requirements. Regulations applicable to the various utilities and public services at NAWSCL are summarized in this chapter. Where applicable, the sections also include the policies, goals, and guidelines related to utilities and public services of NAWSCL and Ridgecrest.

3.9.3 Utilities

Major utility-based systems at NAWSCL are water, wastewater treatment, electrical service, natural gas, propane, steam distribution, and solid waste. Most of the systems are at Mainsite and immediately adjacent areas. Facilities located on the North and South Ranges are served by a limited local distribution network. Typically, utilities (e.g., water and sewer) are buried and electrical is mounted on poles adjacent to the roads on each range.

3.9.3.1 Water

NAWSCL owns and operates its own water supply, storage, and distribution systems, supplied from local groundwater. Agreements with IWVWD and the Inyokern Community Services District provide for additional water to be supplied to the Installation in emergency situations. These connections are near the NAWSCL geodesic water reservoirs in the Intermediate Well Field on the North Range and in Inyokern (U.S. Navy 2005a).

Requirements for lead and copper sampling are outlined in the federal Safe Drinking Water Act (42 U.S.C. § 300f et seq.). The DoN's Environmental Readiness Manual (OPNAVINST M-5090.1) identifies requirements and responsibilities for protecting drinking water supplies at naval facilities.

Deep wells in IWV are the source of potable water for the population center at North Range. The main water distribution system serves Mainsite and the Michelson Laboratory Complex, the propulsion and ordnance laboratories, Armitage Airfield, and the southern portion of George Range. Seven production wells serve the North Range. Water for fire protection is provided by this same system. Water usage at NAWSCL ranges from a high in the summer of approximately 4.8 million gallons per day (mgd) (18.3 million liters per day [mld]) to a low of approximately 1.0 mgd (3.7 mld) in the winter. The water supply system is reported to be adequate during the high-use months (U.S. Navy 2004a).

Water supply to the South Range is limited to four wells. One well is in the Gun Line area of Randsburg Wash and supplies water to Central Site, one well is located in Superior Valley, and two wells are located at Sea Sites 1 and 3. Water on the North Range is stored in 16 reservoirs located along the distribution system. Four reservoirs are on the South Range. A deep well turbine and booster pump supply water to a 135,000-gallon (511,000-liter) reservoir. This reservoir supplies the distribution system, which serves the dual purpose of providing both domestic potable water and water for firefighting. Water for other outlying areas on the South Range is trucked in or purchased as bottled water.

Coso Cold Spring is used for potable water by the community of Darwin. No adverse effects to this drinking water supply have been experienced to date or identified through water quality sampling (U.S. Navy 2004a).

3.9.3.2 Wastewater Treatment

Domestic Wastewater

Ridgecrest leases and operates the on-installation wastewater treatment plant (WWTP) (Mainsite) and maintains the plant to meet water quality standards and future loads. The plant operates under the jurisdiction of the Lahontan RWQCB. Individual septic systems are under the jurisdiction of the San Bernardino County and Kern County health departments. Ridgecrest's plant operates under two board orders: Waste Discharge #6-93-85 (WDID #6B150116001) and Reclamation #6-93-86 (WDID #6B159101001) (U.S. Navy 2004a). These board orders outline standard provisions for wastewater discharge and reclamation, including effluent discharge limitations and receiving water limitations.

Ridgecrest processes wastewater from NAWSCL and the Ridgecrest area. NAWSCL pays for the cost of disposal based on the measured wastewater flow from entities on the Installation. Primary treatment consists of removing grit and primary sediment. Secondary treatment is provided by 7 oxidation ponds and 4 evaporation/percolation ponds on approximately 220 acres (88 hectares). Most of the effluent is evaporated or percolated; however, up to 1.4 mgd (5.3 mld) of effluent is used to irrigate the NAWSCL golf course (U.S. Navy 2004a).

The wastewater collection system and treatment plant have adequate capacity to process the current volume. The plant has a rated design capacity of 3.6 mgd (13.6 mld) and a peak design capacity of 5.4 mgd (20.4 mld). The average daily volume is approximately 2.9 mgd (10.9 mld). The plant is operating at a flow rate ranging from 2.5 mgd (9.5 mld) in the winter to a peak of 3.3 mgd (12.5 mld) in the summer. The plant is operating within its rated capacity and can sustain a population increase in Ridgecrest and NAWSCL.

In addition to the Ridgecrest WWTP, the Salt Wells Propulsion Laboratory is equipped with its own WWTP. The Salt Wells Propulsion Laboratory treatment plant operates under a discharge permit, Board Order #6-94-53. The design capacity of the plant is 0.02 mgd (0.08 mld). Domestic wastewater generated from the Salt Wells Propulsion Laboratory is treated by two septic tanks. An average of 0.01 mgd (0.04 mld) of domestic wastewater is discharged to 2 unlined evaporation/percolation ponds. Other, more remote, areas of NAWSCL rely on individual septic systems to treat domestic wastewater. Effluent pumped from the septic systems is treated at the Mainsite plant (U.S. Navy 2004a).

Industrial Wastewater

Industrial wastewater (IWW) discharges at NAWSCL are generated by the Golf Course Chlorination Facility, Salt Wells Propulsion Laboratory treatment plant, and the Armitage Fire Fighting Training Facility. These facilities operate under Waste Discharge Requirement (WDR) permits issued by the RWQCB. Industrial wastewaters are delivered according to these WDRs to the WWTP that services Ridgecrest's domestic sewer system. Any discharges to the domestic sewer system comply with Ridgecrest's pretreatment regulations that prevent the introduction of pollutants into the city's publicly owned treatment works.

The Golf Course Chlorination Facility flows up to 1.4 mgd (5.3 mld) of treated water for landscape irrigation purposes only. This water, which was previously treated at the Ridgecrest headworks (clarifiers, digestors, etc.), flows through three facultative ponds before the DoN intercepts the water for golf courses uses. The water then flows through a series of garnet sand filters and into a chlorine contact chamber for

45 minutes before delivery to the DoN storage pond, with subsequent delivery to the golf course ponds for use.

An IWW collection system is located at the Salt Wells Propulsion Laboratory area and operates separately from the Salt Wells Propulsion Laboratory domestic sewer system. Wastewater contaminated with energetics, solvents, and inorganics from various RDAT&E activities at the Salt Wells Propulsion Laboratory area is generated, filtered where necessary to remove energetic solids, and then temporarily accumulated in collection tanks at nine separate locations. RDAT&E activities in the Salt Wells Propulsion Laboratory area typically generate 20,000 gallons (75,700 liters) of IWW annually. IWW may be removed via tanker truck for off-installation treatment/disposal at any of the collection tanks or at the centralized location when tanks reach capacity or the accumulation time period of no more than 90 days is met. This allows for a virtually unlimited amount of IWW to be generated.

A WDR for the Armitage Fire Fighting Training Facility regulates a circular concrete pad used for training firefighters to fight aircraft fires, simulated by igniting a layer of JP-8 within the pad. After training, the pad is drained through an oil/water separator, and the water is discharged to the Ridgecrest WWTP at an average of 4,100 gallons (15,520 liters) of wastewater per day of use (the WDR limits discharge to 288,000 gallons [1,090,200 liters] in a 24-hour period) (U.S. Navy 2004a).

3.9.3.3 Electrical Service

Southern California Edison provides electrical service to NAWSCL from its Inyokern substation (U.S. Navy 2004a). Southern California Edison maintains service easements for operations and maintenance of electrical lines. The substations have a total capacity of 57,212 kilovolt amperes (kVA), which equates to 45.7 megawatts (MW). The distribution system has an even greater capacity of 111,862 kVA, which equals 89.5 MW. As a result, NAWSCL is at approximately 50 percent of its electrical capacity. Electrical distribution throughout NAWSCL is performed by on-installation substations, which then distribute electricity to each building via power lines. The electrical system at NAWSCL is within system capacity (U.S. Navy 2004a).

In 1986, NAWSCL developed its geothermal energy resources at Coso KGRA through a third-party contractor. The contractor produces geothermal energy at Coso, which is sold to Southern California Edison at the Inyokern and Kramer Junction substations. Southern California Edison continues to supply electric power to NAWSCL. Total generating capacity at the Coso KGRA amounts to more than 250 MW, enough electricity to service approximately 300,000 homes.

3.9.3.4 Natural Gas

Pacific Gas & Electric (PG&E) provides natural gas service to NAWSCL. PG&E maintains natural gas service easements for operation and maintenance of natural gas lines. Natural gas is the primary fuel used for space, process, and water heating in the more populated areas. Approximately 1,000 natural gas service connections supply NAWSCL through a gas main transmission line installed in the late 1970s. Typical natural gas usage at NAWSCL is approximately 57,000 deca therms per month. The natural gas distribution system is reported to be in good condition, and the capacity is more than adequate to meet both existing demand and an increase in demand (U.S. Navy 2004a).

3.9.3.5 Propane

Propane is used for space heating, water heating, and other domestic uses in remote areas on NAWSCL. Propane is delivered by a private contractor to a series of on-installation storage tanks with a total capacity of 400,000 gallons (1,514,000 liters). Propane is distributed by truck throughout NAWSCL by the

DoN. NAWSCL has approximately 200 propane service connections, and the tanks are installed above ground near the end users. The lines are installed primarily below ground except where they come off the tank. Propane usage is reported by the amount delivered from the contractor. January is the highest use month, with approximately 76,610 gallons (289,968 liters) of propane delivered. In general, the individual propane distribution systems are reported to be in poor condition. There are ongoing projects to convert many of the propane connections to the natural gas system where feasible (U.S. Navy 2004a).

3.9.3.6 Steam Distribution

Two major steam-generating plants operate on NAWSCL, each of which contains two or more boilers. Steam Plant #2 is at Mainsite and Steam Plant #4 is in the Salt Wells Propulsion Laboratory area. Steam Plant #1 and #3 are no longer in operation. Each plant serves a large area through a distribution system that supplies steam to several buildings. Some buildings are not connected to the steam distribution system, but instead have individual boilers. Boilers are used for space, process, and hot water heating, and, in some cases, provide power for absorption chillers and for humidifiers in some laboratories. The steam distribution lines on Mainsite and Armitage Airfield are installed underground; the distribution lines in the Salt Wells area are mostly above ground (U.S. Navy 2004a).

The steam plants are in relatively good condition, but the distribution piping is in generally poor condition because of age. The steam system is gradually being downsized due to the high cost of upgrading. Certain facilities are being refitted with individual boilers or are being refitted with individual heating and cooling units, both of which are fueled by natural gas. Operation and maintenance of the steam distribution system is managed by NAWSCL (U.S. Navy 2004a).

3.9.3.7 Solid Waste

NAWSCL's Pollution Prevention Program aims to reduce the amount of solid waste generated on-installation. The Pollution Prevention Program includes requirements to develop integrated waste management procedures and to document these procedures in a Solid Waste Management Plan. This plan outlines procedures to minimize waste generation and landfill disposal, and was written in conjunction with the following regulations:

- OPNAVINST M-5090.1, Environmental and Natural Resources Program Manual;
- The California Integrated Waste Management Act (Assembly Bill 939); and
- The California Beverage Container Recycling Act (Assembly Bill 2020).

The NAWSCL recycling program is an integral part of the Pollution Prevention Program. Recycling is the reuse or reclamation of previously used materials that would become wastes and require disposal if not recycled. In addition to recycling, the Pollution Prevention Program also incorporates such efforts as source reduction and waste treatment; many of these actions are implemented in conjunction with the City of Ridgecrest (U.S. Navy 2004a).

The Ridgecrest sanitary landfill annually receives 63,000 short tons (57,153 metric tons) of trash. NAWSCL produces approximately 2.5 short tons (2.26 metric tons) of non-hazardous waste annually.

3.9.4 Energy Efficiency and Renewable Energy Initiatives

The DoD is the nation's largest energy user. In recent years, the DoD has launched several initiatives to reduce its fossil fuel use by improving energy efficiency and shifting to renewable energy such as biomass, hydropower, geothermal, wind, and solar to meet Installation needs. Improving energy efficiency can increase the range and endurance of forces in the field while reducing the number of combat forces

diverted to protect energy supply lines, as well as reduce long-term energy costs. The DoD is increasing its use of renewable energy supplies and reducing energy demand to improve energy security and operational effectiveness, to reduce greenhouse gas emissions in support of U.S. climate change initiatives, and to protect the DoD from energy price fluctuations.

In 2010, the DoD Office of the Assistant Secretary of Operational Energy Plans and Programs was established to coordinate energy issues. In 2011, the DoD published its Operational Energy Strategy to set the overall direction for operational energy security. The DoD and Department of Energy published a Memorandum of Understanding in July 2010 to facilitate cooperation to accelerate the research, development, and deployment of energy efficiency and renewable energy technologies.

The DoD also must comply with the following executive orders and federal legislation regarding energy initiatives:

- **Executive Order 13423 (2007):** Requires federal agencies to reduce energy intensity by three percent annually or 30 percent by the end of FY 2015 (compared to FY 2003 baseline), with the goal of improving energy efficiency and reducing greenhouse gas emissions. Agencies must reduce their vehicle fleets' total consumption of petroleum by two percent annually through the end of FY 2015 (based on FY 2005 baseline).

- **Executive Order 13514 (2009):** Requires federal agencies to set percentage reduction targets for greenhouse gas emissions for FY 2020. Agencies shall consider reductions through reducing energy intensity in buildings, increasing use of renewable energy, and reducing the use of fossil fuels in vehicles. Agencies shall implement high performance sustainable Federal building standards for new construction and major renovation beginning in 2020.

- **Energy Independence and Security Act of 2007:** Section 431 requires federal buildings to reduce total energy use by 30 percent by FY 2015 (based on FY 2003 baseline). Section 526 prohibits federal agencies from purchasing fuels with higher lifecycle greenhouse gas emissions than conventional petroleum fuels.

- **National Defense Authorization Act of 2010:** Section 2842 requires the DoD to produce or procure 25 percent of its total facility energy use from renewable sources beginning in 2025.

The DoN established its Energy Task Force, consisting of an executive steering committee, the DoN Energy Coordination Office, and seven working groups encompassing both tactical and shore programs to meet energy goals, including:

- Energy Efficient Acquisition: Evaluation of energy factors would be mandatory when awarding DoN contracts for systems and buildings;

- Sail the "Great Green Fleet": The DoN would demonstrate a Green Strike Group (biofuels and nuclear powered vessels) in local operations by 2012 and sail the Great Green Fleet by 2016;

- Reduce non-tactical petroleum use in the commercial fleet by 50 percent by 2015;

- Produce at least 50 percent of shore-based energy from alternative sources by 2020; 50 percent of DoN and Marine Corps installations would be net-zero by 2020;. and

- By 2020, 50 percent of total energy consumption would come from alternative sources.

At NAWSCL, several energy initiatives are underway, including:

Geothermal Plant Operations. The Coso geothermal development is run by a single operator, the Coso Operating Company, in part as a DoN contractor (Navy One and Two power plants) and as a BLM geothermal lease holder (BLM East and West power plants). These four power plants are located within the Coso Geothermal LMU. The power plants were constructed between 1987 and 1990 and have a total generating capacity of more than 250 megawatts, enough to power approximately 300,000 homes.

Solar Energy Project Occurring at NAWSCL. A 13.8-megawatt solar photovoltaic power system was constructed and went into operation in 2012. The solar project covers 118 acres (48 hectares) and consists of 31,680 high-efficiency solar panels that are expected to supply 30 percent of the Installations energy needs through a power purchase agreement. The Agreement allows the DoN to buy electricity at a discount from retail utility rates and reduce its costs by an estimated $13 million over the next 20 years. The solar project is the largest in the DoN and will help the service achieve its goal of obtaining 50 percent of its shore-based energy requirements from alternative sources by 2020.

3.9.5 Public Services

NAWSCL offers numerous public services, including health services, police services, and fire protection. In addition, recreational facilities are largely available to the local community and NAWSCL residents and employees.

3.9.5.1 Police Services

The China Lake Police and Security Division (CLPD) provides law enforcement and public safety services to NAWSCL. These services include developing security measures; implementing access control policies and procedures and anti-terrorism procedures; and providing standard law enforcement, traffic control, and crime prevention activities. Currently, CLPD is staffed by civilian employees (DoD civil service employees) that include police officers, security specialists, and administrative staff. CLPD is supplemented by six Masters-at-Arms. The Naval Criminal Investigative Service office is located at Building 451, which is staffed with four special agents (U.S. Navy 2011b).

The Ridgecrest Police Department (RPD) provides law enforcement and public safety services to areas off-installation, which includes the city of Ridgecrest. RPD provides general law enforcement and emergency response services, traffic control, and crime prevention, and oversees animal control and the Police and Community Together (PACT) neighborhood watch program (City of Ridgecrest 2011).

The RPD and CLPD coordinate regularly, with the CLPD providing assistance to the RPD on an as-needed basis at RPD's request.

3.9.5.2 Fire Protection Services

Fire protection services are provided on the Installation by the China Lake Federal Fire Department (CLFD), which is considered part of the Navy Region Southwest Federal Fire and Emergency Services Division. The CLFD provides a full range of services, including firefighting, emergency medical services, aircraft crash and rescue, weapons testing fire support, hazardous materials response, wildland firefighting, and fire prevention and education. As of 2011, the CLFD had approximately 65 personnel and 3 fully equipped fire stations.

Ridgecrest and the surrounding communities are served by the Kern County Fire Department (KCFD). The KCFD has approximately 625 permanent employees, with 546 uniformed firefighters stationed at 46 stations throughout the county. Services provided include fire suppression, emergency medical services, hazardous materials mitigation, fire prevention, rescue, air operations, training and public education, arson investigation, and apparatus maintenance. The KCFD maintains 55 engines, 4 ladder trucks, 25 command vehicles, 5 water tenders, 5 crash rescue vehicles, and 2 helicopters, as well as a number of other vehicles used to assist in fire suppression, hazardous materials cleanup, and education. In 2010, the KCFD responded to more than 59,000 calls. Three stations are within the study area:

- Ridgecrest Heights Station 77 at 815 West Dolphin Avenue, Ridgecrest;
- Ridgecrest Station 74 at 129 East Las Flores, Ridgecrest; and
- Inyokern Station 73 at 6919 Monache Mountain Avenue, Inyokern.

The CLFD provides supplementary fire-fighting services to the KCFD when needed, and provides the KCFD with FAA airport certification training. The KCFD has 14 Mutual Aid Agreements with other fire suppression organizations, including the CLFD (U.S. Navy 2011c). NAWSCL is in the process of establishing a fire policy. This policy along with its management measures would reduce on-installation fire-related impacts. For additional information on fire management, refer to Section 4.4.2.1, Biological Resources.

3.9.5.3 Health Services

NAWSCL health services are provided by the Branch Health Clinic, located on the Installation at Blandy Avenue and Lauritsen Road. The Branch Health Clinic is part of Naval Hospital Twenty-nine Palms and provides a range of services to active-duty military, retired military, and their families such as family practice medicine, dental services, laboratory and radiological services, immunizations, general screenings, and physical exams. A pharmacy is also located at the Branch Health Clinic. The Branch Health Clinic is generally limited in specialty care, as it is focused primarily on treating general medication conditions. Patients needing emergency treatment or specialty care are referred to Ridgecrest Regional Hospital (U.S. Navy 2011d). Emergency air ambulance to other regional hospitals is available at Ridgecrest Regional Hospital.

Ridgecrest Regional Hospital is the primary provider of emergency and specialty health services in Ridgecrest, located at 1081 North China Lake Boulevard. The hospital provides a wide range of services, including an intensive care unit/critical care unit, surgical services, and ambulatory care services. The clinical laboratory, radiology, rehab, cardiac rehabilitation, and cardiopulmonary departments provide in-patient and out-patient services to Ridgecrest residents and NAWSCL military service members. Other departments at Ridgecrest Regional Hospital include quality and risk management services, environmental services, plant technology and maintenance, social services, utilization review, case management, health information, pharmacy, medical staff services, infection control, admitting, fiscal services, administration, human resources, and information systems (Ridgecrest Regional Hospital 2011). The Heather Stone Medical Clinic (formerly the Drummond Medical Clinic), located at 900 North Heritage Drive, also provides specialty medical services, including urgent care, orthopedics, and management of the Rapid Care Cash Clinic for residents without health insurance who need general medical care (Justis 2009).

3.9.5.4 Education

There are five schools on NAWSCL property under the Sierra Sands Unified School District (SSUSD): Richmond Elementary School and Murray Middle School, both within the NAWSCL perimeter fence, and Burroughs High School, Pierce Elementary School, and Vieweg Elementary School, all outside of the

perimeter fence. For the 2009/2010 school year, Richmond Elementary had 490 students. Average class sizes ranged from 25 (kindergarten) to 32 (fourth grade). Richmond Elementary students exceeded average scores on standardized tests for English/language arts, math, and science, with 74 percent and 71 percent of students either scoring “proficient” or “advanced” in math and science, respectively (SSUSD 2011a). Murray Middle School had 678 students during the 2009/2010 school year. Average class size ranged from 28 (English and science) to 32 (history). Murray Middle School students exceeded average scores on standardized tests for science, algebra, history/social science, and English/language arts. Students considered proficient or advanced in algebra comprised 83 percent of the school, which far exceeded the average for California (47 percent) (SSUSD 2011b).

Other schools in Ridgecrest are Burroughs High School, Mesquite High School (a continuing education high school), James Monroe Middle School, Faller Elementary School, Gateway Elementary School, Las Flores Elementary School, and Pierce Elementary School. Burroughs High School, sited on DoN-owned land outside of NAWSCL boundaries, had 1,560 enrolled students during the 2009/2010 school year; the average class size was 30, with an academic performance index of 775, which is higher than the state average of 728 (SSUSD 2011c). James Monroe Middle School had 516 enrolled students with an average class size of 28, with an academic performance index of 760, which was slightly lower than the state average of 768 (SSUSD 2011d). Elementary school enrollments for schools within Ridgecrest ranged from 322 students (Pierce Elementary) to 488 (Gateway Elementary). Class sizes were generally in the mid- to high 20s, with some individual grade levels having class sizes in the low 30s (SSUSD 2011e).

3.9.5.5 Recreation and Community Facilities

Recreation and community facilities on NAWSCL are managed through the Morale, Welfare, and Recreation Department. NAWSCL policy allows public access to the Installation for recreation on a case-by-case basis when it does not interfere with the military mission.

NAWSCL provides various recreational programs and facilities to the military, DoD employees, and their family members. Outdoor recreation facilities include riding stables, swimming pools, tennis courts, basketball courts, playing fields, and a golf course. Indoor facilities include a complete gymnasium, indoor pool, and bowling alley. The golf course and gymnasium are also available to the general public.

Ridgecrest provides recreational facilities and opportunities commensurate with population levels. The city’s policies also include developing parks and trails linking recreational areas to housing and schools; establishing a parks, recreation, cultural, and open-space coordinating committee; and preparing and adopting a parks, recreation, cultural, and open-space master plan.

3.10 PUBLIC HEALTH AND SAFETY

The safety programs at NAWSCL encompass all types of RDAT&E activities, including flight safety; munitions handling, transport, and disposal; explosive safety; laser safety; radiation safety; and procedures for firing solid rocket motors. In addition, a personnel safety program is in place to ensure that employees understand the hazards of working on range property. Safety rules have been established to control range access, delineate danger areas, and educate the work force about range hazards. The following are some of the safety programs and hazard types:

- *Height Restrictions and Imaginary Surfaces* – Restrictions are placed on the height of on-installation structures that could obstruct or interfere with aircraft arrivals and departures at Armitage Airfield.
- *Accident Potential Zones (APZs)* – Specific areas are designated and controlled near the ends of runways where potential risk for aircraft accidents and mishaps is higher.
- *Tracking of Aircraft Incidents* – Strict reporting requirements, historical tracking, and analysis of aircraft incidents and accidents are used to identify sources of hazards and influence the development of new flight rules and SOPs to increase flight safety.
- *Electromagnetic (EM) Interference and Hazards of Electromagnetic Radiation to Ordnance* – Potential sources of EM radiation that could interfere with the functioning of aircraft systems and munitions are monitored and restricted throughout the ranges.
- *Bird/Animal Aircraft Strike Hazard (BASH)* – Strategies are developed and implemented to reduce the presence of birds in the immediate vicinity of the airfield to reduce the likelihood of bird/aircraft collisions.
- *Smoke and Dust* – Land use planning and control strategies are developed to discourage land uses that generate large quantities of dust, smoke, or other airborne emissions that can impair visibility on the range.

3.10.1 Region of Influence

The ROI for public health and safety considerations consists of the lands within NAWSCL boundaries and the local communities (Ridgecrest, Inyokern, Trona, Homewood Canyon, Randsburg, Red Mountain, Johannesburg, Pearsonville, and Little Lake). The public health and safety ROI also includes airspace above these communities.

3.10.2 Range Safety

The Test Management Office, in coordination with the test sponsor and the Range Safety Officer, establishes the specific range safety requirements for tests. Procedures and approval processes for the use of live munitions and for live tests ensure that strict safety requirements are met (U.S. Navy 2011a).

3.10.2.1 Range Access

Public access to NAWSCL is controlled for security reasons and to safeguard against potential hazards associated with military RDAT&E and training activities. Foot and vehicular traffic enter the Installation through three guarded entry control points. NAWSCL is made up of two principal land areas (North Range and South Range) that are primarily surrounded by BLM and other federal agency lands. The communities of Ridgecrest and Inyokern are adjacent to the southern boundary of the North Range. Public access to the range areas for educational, recreational, or other special purposes is strictly controlled through established procedures involving the NAWSCL Police Department and the Public

Affairs Office. Public access to the Mainsite area is controlled via a badging system and security guards at the Main Gate. Perimeter security fencing, perimeter ditches, and terrain further discourage unauthorized public access. In addition, roving patrols regularly check remote areas for signs of unauthorized entry. Personnel requiring range access are logged in and out, and are closely controlled by designated range control authority. Roadblocks, barricades, locked gates, and guards are also used to prevent entry into areas with imminent hazards. Searches are conducted for individuals who do not log out at expected times or who are unaccounted for when RDAT&E or training exercises are scheduled to begin.

Access to remote range areas and hazardous operations facilities, which include sites used for storing, assembling, testing, and inspecting energetic materials, is strictly controlled. Permission to enter these areas or sites must be obtained from the controlling authority. Access to areas of the North and South Range is controlled by Range Control. Access to other sites is controlled by the site supervisor or facility coordinator. The controlling authority denies access to non-essential personnel during hazardous operations.

Restricted airspace area R-2505 overlies the North Range. Restricted area R-2524 overlies the South Range. Access to restricted airspace is governed by FAA regulations. China Control is the controlling authority for the restricted airspace. The control center closely monitors the airspace during scheduled flight events and ground activities that create a hazard more than 500 feet (152 meters) above ground level. China Control notifies RDAT&E operations conductors whenever non-participating aircraft might intrude into restricted airspace; RDAT&E activities are not allowed to proceed until the safety of non-participants is ensured.

3.10.2.2 Flight Termination

To prevent an impact off-range, a flight termination system is generally required for missiles or air vehicles that have the capability to exceed designated impact limits. A flight termination system may be required for other test items to prevent impact in protected areas on-range and to prevent any test item from extending beyond Installation boundaries. Flight termination may be achieved by any number of means, including parachute recovery, controlled flight into the ground, intentional departure from controlled flight with subsequent ground impact, thrust termination, and air vehicle destruction using on-board explosive devices.

The Missile Flight Safety Officer (MFSO) is required to terminate a missile or air vehicle flight whenever the determination is made that continued flight could pose a hazard to a protected area on or off the Installation, or whenever the MFSO is not able to verify that no such threat exists. Specific conditions that require termination include the following:

- The test item crosses a predetermined termination boundary;
- The test item threatens to cross the termination boundary later in the flight, but the freedom to terminate the flight at that later point may be restricted;
- Telemetry indicates that the test item performance is diminishing to the point that continued flight would create a safety hazard;
- There is a loss of trajectory data; or
- Telemetry or other information source indicates that the test item is seeking the wrong target.

3.10.2.3 Safety Planning and Documentation

In accordance with the NAWCWD Risk Decision Policy a risk assessment package is developed and briefed to command. For those missions that meet the reporting criteria the risk assessment package would identify risks and associate mitigations that would be applied to manage it.

3.10.3 Target and Test Sites

Weapons and weapon systems RDAT&E and training activities are conducted in the air and on the ground at NAWSCL. Ground-based targets are used to test and evaluate the performance of the weapons systems and to provide realistic training scenarios.

Risk assessment and management is conducted on a per event basis, utilizing criteria, policies, and processes provided in Range Commanders Council (RCC) Standard 321-10, *Common Risk Criteria Standards for National Test Ranges* (RCC 2010). The RCC is a multi-disciplinary committee comprised of members from the DoN, U.S. Air Force, U.S. Army, and NASA. The Standard, RCC 321, was developed to provide consensus standards intended to:

- Promote a uniform process among the ranges;
- Promote valid, repeatable risk assessments;
- Foster innovation to support challenging missions;
- Nurture openness and trustworthiness among the ranges, range users, and the public;
- Simplify the scheduling process; and
- Present common risk criteria that can reduce cost for users of multiple test ranges.

For each planned test or training activity, range personnel conduct risk assessments, based upon RCC 321 methods. From these assessments, weapon danger zones or hazard patterns are determined. The boundaries of the different areas are driven by allowable risk to the general public, mission essential personnel, and property assets (RCC 2010). North and South Range target and test sites are shown in Figures 2-1 and 2-2 (respectively) in Chapter 2. In addition to the risk assessment and management standards provided in RCC 321, RDAT&E and training activities at NAWSCL utilize other standards and procedures to ensure the safety of the general public and mission essential personnel. Naval Sea Systems Command (NAVSEA) OP-5, Volume I (NAVSEA 2008a), and NAWSCL SOPs provide the guidelines and procedures for the safe conduct of any RDAT&E activities requiring the use of high explosive (HE) munitions. In addition, NAVSEA conducts rigorous periodic inspections of NAWSCL facilities and procedures to ensure that munitions safety programs are properly implemented (U.S. Navy 2011a).

3.10.4 Airspace and Flight Safety

Aircraft events are conducted within the airspace above and surrounding NAWSCL, including restricted areas and military operations areas. Airspace operations and coordination with surrounding air traffic control facilities are conducted according to FAA and DoN regulations.

Navy aircraft flight activity at NAWSCL are conducted in accordance with the Naval Air Training and Operating Procedures Standardization (NATOPS) program, which prescribes general flight and operating instructions and procedures applicable to the operation of all U.S. naval aircraft and related activities. Comprehensive operating procedures are employed at NAWSCL to reduce the potential for aircraft

accidents. These procedures include holding routine briefings for pilots and range personnel to review established safety practices and procedures, and conducting frequent ground inspections on equipment related to any RDAT&E or training event. Pilots are also required to exercise caution to remain within approved flight routes and holding patterns. A full description of flight routes (including arrival and departure corridors) is provided in Section 3.4 of the 2011 AICUZ Update. Flight leaders are responsible for monitoring aircraft events, correcting procedural errors, and directing aircraft to maintain safe operating conditions.

Aircrews have historically been required to maintain a minimum altitude in the R-2508 airspace of 3,000 feet (914 meters) above ground level and a minimum lateral distance of 3,000 feet (914 meters) from the pre-1994 boundaries of Death Valley. Additional overflight considerations were initiated by the Joint Policy and Planning Board in cooperation with the managers of the Sequoia and Kings Canyon National Park and the Domeland and John Muir Wilderness Areas. In April 2000, the Joint Policy and Planning Board enacted a policy whereby military flights over the Sequoia and Kings Canyon National Park would maintain a minimum altitude of 8,000 feet (2,438 meters) above ground level during the peak visitor months of June through September. Although FAA requires a minimum of 1,000 feet (305 meters) above ground level over inhabited areas (including Ridgecrest, Trona, and Inyokern), aircrews are encouraged to maintain a minimum altitude of 3,000 feet (914 meters) above ground level over these areas.

Requests for use of the China Lake Range Complex for RDAT&E and training events are made through the Test Management Office. Each request is assigned to a test manager who is responsible for scheduling use of airspace and range assets with the range's test scheduler and for organizing briefings on airspace, range, and course rules. Aircrews scheduled to operate in the China Lake Range Complex must receive a range briefing before their activities. The test scheduler compiles test schedules for the North Range to ensure that test events do not conflict with one another. Test and training requests are assigned to a test manager, who is responsible for scheduling airspace and range assets with the test scheduler and organizing briefings.

Use of military airspace outside of Installation boundaries is scheduled through the R-2508 Central Coordinating Facility located at Edwards Air Force Base. The R-2508 Complex is an airspace complex used by DoD for the advancement and employment of weapons systems technology and training. The R-2508 Complex includes airspace presently managed by the three principal military activities in the upper Mojave Desert region: 412th Test Wing, Edwards Air Force Base; National Training Center, Fort Irwin; and NAWCWD, China Lake. The R-2508 Complex is composed of a number of restricted areas, military operating areas, Air Traffic Control Assigned Airspace areas, and the Trona Controlled Firing Area.

The Trona Controlled Firing Area provides a contiguous operational airspace between the airspace above the North Range (R-2505) and the airspace above the South Range (R-2524) for conducting free-flight weapons testing. The Trona Controlled Firing Area exists within the already established R-2508 Complex and coexists with currently defined military operations areas and Air Traffic Control Assigned Airspace. RDAT&E activities in the Trona Controlled Firing Area undergo a thorough safety review. Ground and/or airborne radar and experienced range personnel acting as visual observers monitor each RDAT&E event through the Trona Controlled Firing Area. Radar systems are used to ensure that the airspace is clear of non-participating aircraft. The standard protocol of publishing a notice to airmen (NOTAM) and the use of military radio channels for communicating would ensure that aircraft avoid these areas while RDAT&E activities are underway.

Occasionally, RDAT&E events involving the use of aerial target drones (remote-controlled aircraft) are conducted over the affected range areas. Target drones can be used for destructive and non-destructive tests. During these tests, George Range, Coso Range, and Airport Lake are evacuated of personnel

except essential mission personnel. Target drones are operated with redundant control systems to ensure that when impacted during a destructive test, the test item remains on the range and within the safety footprint established by the Range Safety Officer.

3.10.5 Airfield Flight Safety

DoD established the AICUZ program to effectively plan for compatibility between military airfield events and on- and off-installation land use in areas surrounding military airfields. NAWSCL updated its AICUZ Study in 2007 (U.S. Navy 2007a) and 2011. In these documents, APZs and noise contours are identified and graphically defined (for current and projected airfield events), and suitable land use guidelines are identified for on- and off-installation land use planning. An APZ identifies areas where accidents are most likely to occur rather than addressing the probability of accidents actually occurring. Several types of APZs are designated, and land use within the APZs is recommended to be restricted to protect aircrews and persons and property on the ground. The AICUZ-defined APZs, in order of decreasing accident potential, are the Clear Zone, APZ I, and APZ II. These zones are depicted in Figure 3.10-1, and the dimensions and applications of each zone are described as follows.

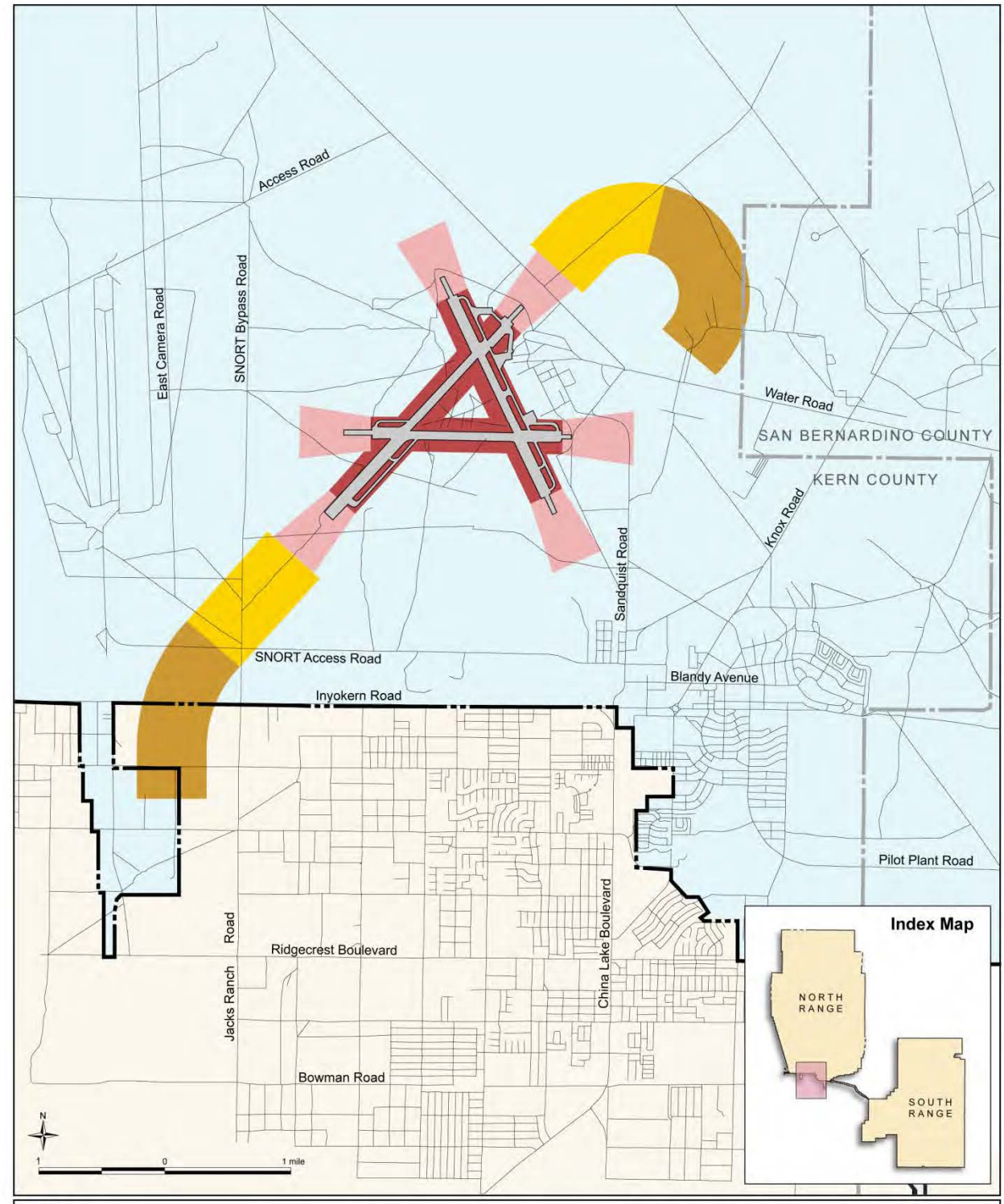
The Clear Zone lies immediately beyond the end of the runway and outward along the extended runway centerline for 3,000 feet (914 meters). The fan-shaped Clear Zone is 1,500 feet (457 meters) wide at the end of the runway and 2,284 feet (696 meters) wide at 3,000 feet (914 meters) from the end of the runway. Because this zone has the highest accident potential, no structures or other obstructions are permitted within its boundaries.

APZ I is the area beyond the Clear Zone that has a significant potential for accidents. This zone is usually provided under flight paths that experience 5,000 or more annual flight events. Typically, APZ I is 3,000 feet (914 meters) wide by 5,000 feet (1,524 meters) long, and is curved to conform to the shape of the flight paths.

APZ II extends beyond APZ I and has a lower potential for accidents. APZ II is usually provided under a flight path whenever an APZ I is required. APZ II is usually 3,000 feet (914 meters) wide by 7,000 feet (2,133 meters) long, and is curved to conform to the shape of flight paths (U.S. Navy 2011a).

In addition to the three zones, setback areas are also defined along runways. These areas extend 750 feet (229 meters) from the runway centerline and define a zone parallel to the runway (for the length of the runway) with a high degree of accident potential. The DoN's Facilities Planning Manual (NAVFAC P80) prohibits any structures within this area. Structures may be placed outside of the setback limits, but are not allowed to penetrate an imaginary plane extending outward and upward at a 7:1 slope starting at ground elevation from the setback line. Existing APZs for NAWSCL are mostly within the Installation boundaries (see Figure 3.10-1). Clear zones and APZs have been defined for both existing and projected conditions as part of the 2007 AICUZ Study and 2010 aircraft noise study for NAWSCL (U.S. Navy 2011a). The APZ II for Runway 21 also extends over the Baker/Charlie approach corridor.

Military aircraft and weapons RDAT&E and training activities are inherently dangerous, and occasionally mishaps or incidents occur. Aircraft incidents include reportable accidents associated with aircraft, ranging from serious events such as the loss of an aircraft to less significant events that may involve the "drop" or accidental release of a piece of equipment from an aircraft. Between 1958 and 2010, 26 aircraft incidents associated with test and training events occurred in the vicinity of Armitage Airfield. Of the 26 identified incidents, all but 2 occurred on NAWSCL property. Of the two incidents that occurred off-installation, one involved an aircraft crash in the vicinity of what is now Faller School. The other incident involved an aircraft crash east of County Line Road and south of Kendall Avenue. The cause of both crashes was attributed to engine failure. Of note, emergencies that occur during the takeoff phase of flight are more hazardous due to the aircraft being heavy, full of fuel, and having slow airspeed; if there is an engine failure or malfunction, the aircraft would have a reduced ability to gain altitude (U.S. Navy 2011a).



Existing Clear Zones and Setback Areas for Armitage Airfield

Figure 3.10-1

3.10.6 Bird-Aircraft Strike Hazards

BASH is defined as the threat of aircraft collision with birds during flight events. It is a safety concern at airfields due to the frequency of aircraft events and the possibility of encountering birds during a flight. Most birds fly close to ground level, and more than 95 percent of the reported bird strikes occur at lower than 3,000 feet (914 meters) above ground level. Military aircraft are prone to strikes because they fly at high speeds and low altitudes, where birds are most active.

NAWSCL has maintained records of BASH incidents and the types of birds involved. NAWSCL implements procedures to minimize BASH potential through the identification of on- and off-installation areas that are habitat for resident and transient bird populations. This information is provided to flight and safety operations personnel for distribution to pilots and aircrews operating at NAWSCL.

3.10.7 Explosive Safety

Ammunition and explosives use is governed by DoN regulations published in NAVSEA OP-5, Volume 1. Explosives use at NAWSCL is managed in accordance with DoN guidance and SOPs to protect NAWSCL personnel, facilities, and equipment. Munitions and explosives materials are stored in specialized storage magazines and facilities at designated locations. An explosive safety quantity distance (ESQD) arc has been established for each magazine and facility used for munitions storage and handling. ESQD arcs create safe distances between munitions storage and handling areas and inhabited buildings. The distance that an ESQD arc extends from an munitions facility depends on the types and quantities of munitions the facility is authorized to store or handle (NAVSEA 2008a).

Activities at NAWSCL require a wide variety and large quantity of munitions. NAWSCL has more than 100 magazines and other explosives storage facilities located throughout the Installation, as well as more than 200 explosives storage and handling buildings in Propulsion Laboratory areas. The ESQD arcs on both the North and South Ranges are shown in Figures 3.10-2 and 3.10-3, respectively. ESQD arcs are contained within NAWSCL boundaries, with the exception of an arc on the railroad siding between the North and South Ranges. NAWSCL has been granted an easement for this ESQD arc.

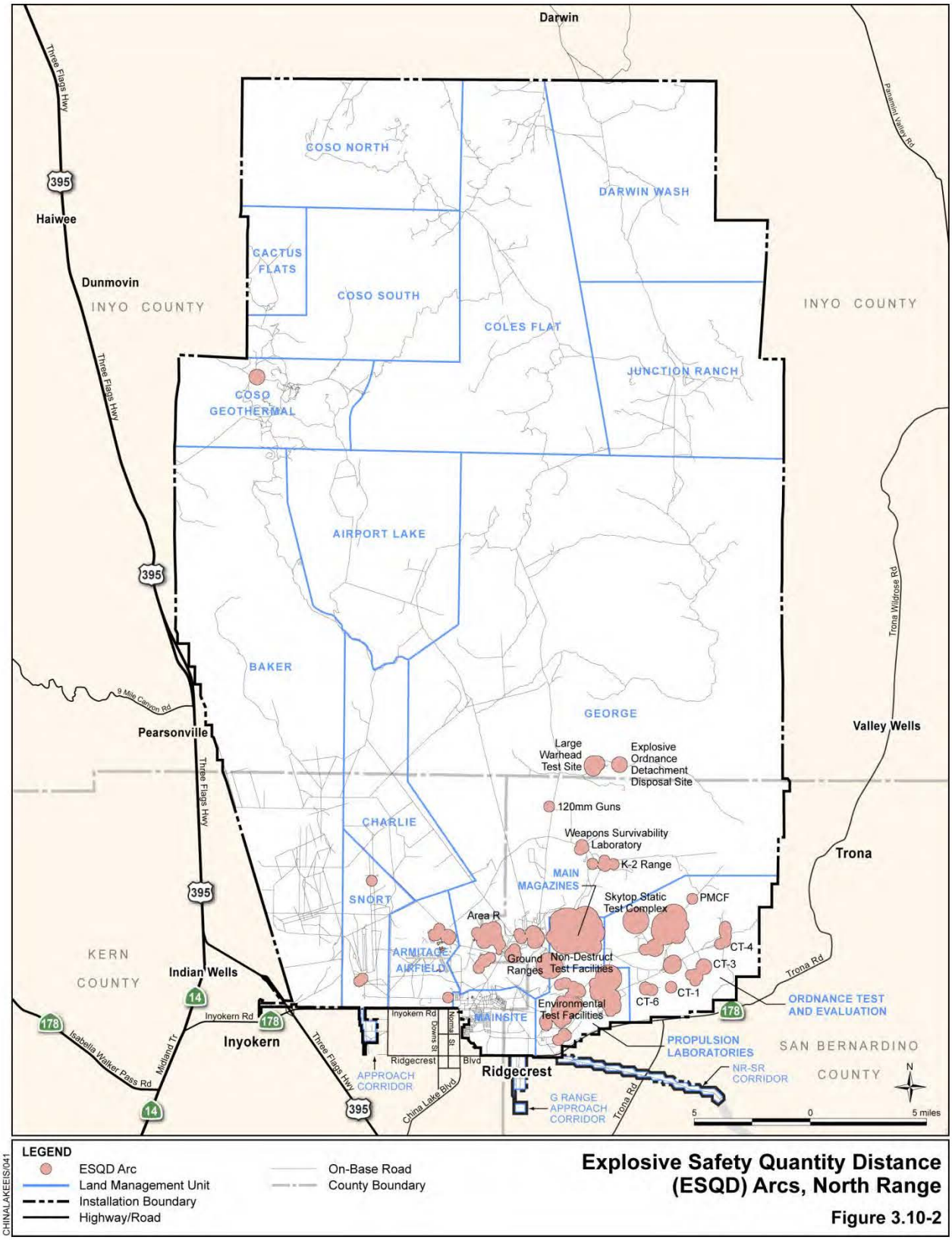
3.10.8 Electromagnetic Frequency Events

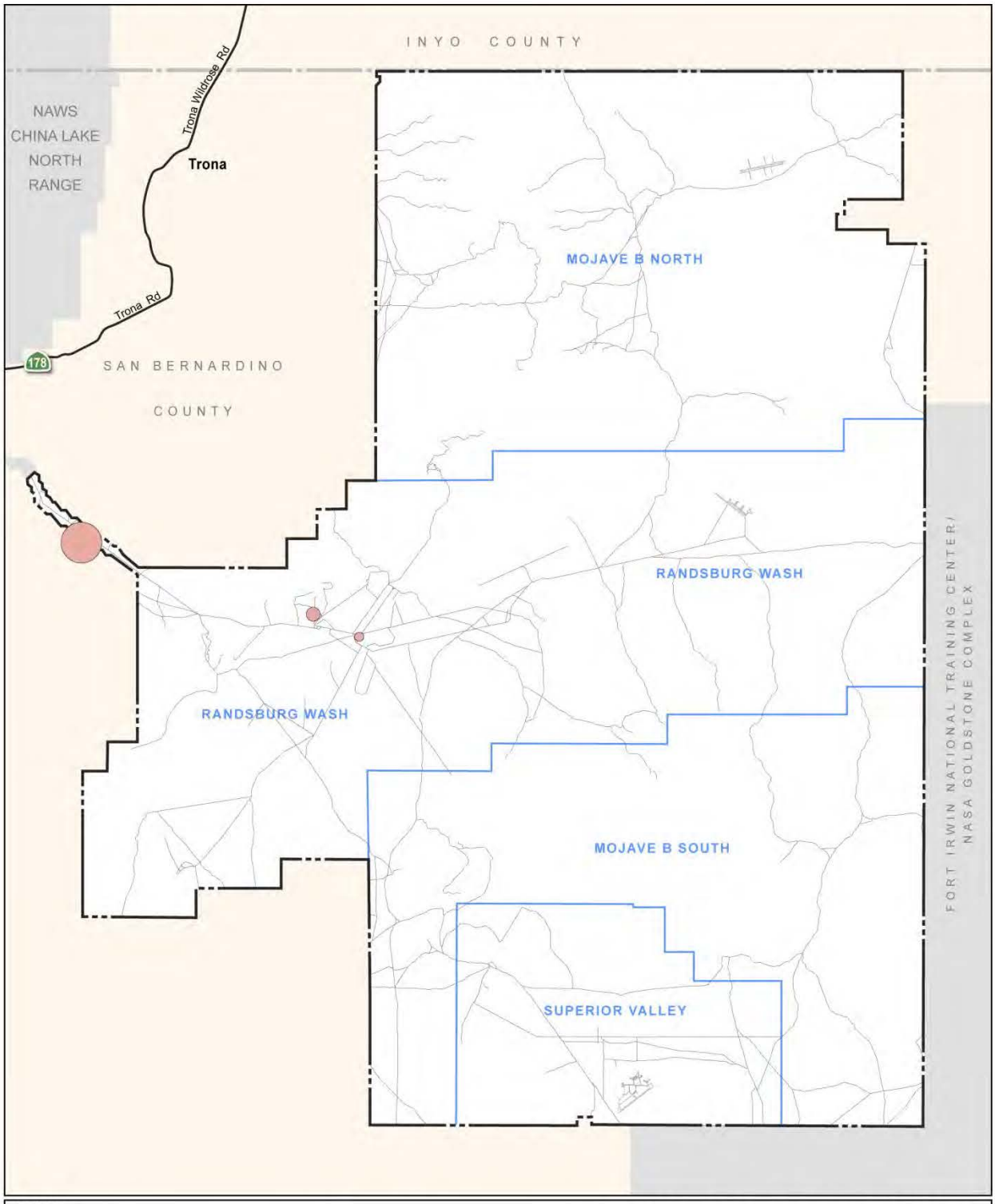
The RDAT&E and training mission of NAWSCL requires use of electronic equipment, such as high-power microwave (HPM) systems, telemetry, video, microwave, radar, command control, and voice communication equipment. The use of such equipment can produce electromagnetic radiation (EMR), radar radiation, and ionizing radiation. NAWSCL established specific areas of operations within the ranges to safely accommodate these types of RDAT&E and training requirements. As part of the range safety standard procedures described in the Range Safety Manual (RSM), radiation hazard arcs have been designated for those systems that may emit radiation. No radiation hazard arcs beyond national standard limits extend beyond the Installation boundaries or into the Mainsite areas of NAWSCL.

3.10.8.1 Electromagnetic Events

Use of electromagnetic equipment, including HPM systems, poses hazards of electromagnetic radiation to fuels, electronic hardware, munitions, and personnel. These hazards are generally segregated as follows:

- Hazards of Electromagnetic Radiation to Personnel (HERP);
- Hazards of Electromagnetic Radiation to Ordnance (HERO); and
- Hazards of Electromagnetic Radiation to Fuel (HERF).


Darwin
Three Flags Hwy
Panamint Valley Rd
COSO NORTH
DARWIN WASH
CACTUS FLATS
COSO SOUTH
COLES FLAT
JUNCTION RANCH
COSO GEOTHERMAL
AIRPORT LAKE
BAKER
GEORGE
CHARLIE
SNORT
MAIN MAGAZINES
ARMITAGE AIRFIELD
MAINSITE
APPROACH CORRIDOR
G RANGE APPROACH CORRIDOR
PROPULSION LABORATORIES
NR-SR CORRIDOR
ORDNANCE TEST AND EVALUATION
Haiwee
Dunmovin
INYO COUNTY
Pearsonville
9 Mile Canyon Rd
Indian Wells
KERN COUNTY
Inyokern
Inyokern Rd
Isabella Walker Pass Rd
Midland Tr
Ridgecrest
Downs St
Norma St
Blvd
China Lake Blvd
Trona Rd
Trona Wildrose Rd
Valley Wells
Trona
SAN BERNARDINO COUNTY
Large Warhead Test Site
Explosive Ordnance Detachment Disposal Site
120mm Guns
Weapons Survivability Laboratory
K-2 Range
Skytop Static Test Complex
PMCF
Area R
Ground Ranges
Non-Destruct Test Facilities
Environmental Test Facilities
CT-1
CT-3
CT-4
CT-6
395
14
178
N
5
0
5 miles
LEGEND
ESQD Arc
Land Management Unit
Installation Boundary
Highway/Road
On-Base Road
County Boundary
CHINALAKEEIS/041
Explosive Safety Quantity Distance (ESQD) Arcs, North Range
Figure 3.10-2



Explosive Safety Quantity Distance (ESQD) Arcs, South Range

Figure 3.10-3

Current industrial specifications for radiation hazards are contained in American National Standards Institute (ANSI)/Institute of Electrical & Electronics Engineers C95.1-1992, which was used as a reference to create the combined DoN regulation NAVSEA OP3565/NAVAIR 16-1-529. Volume I contains HERP and HERF limits; its current version is REV 5. Volume II (REV 6) covers HERO. These limits are shown in Figure 3.10-4, although all values have been converted to average power density.

These limits as shown are average power density. The potential dangers to munitions and fuels are obvious because an explosion could set off a "chain reaction"; consequently, these limits are generally lower than personnel limits. There are three HERO categories. HERO limit 1 is for munitions known to be susceptible to hazards of electromagnetic radiation that is fully assembled and undergoing normal handling. HERO limit 2 is set for HERO "unsafe" or "unreliable" explosive devices with exposed wires arranged in optimum (most susceptible) receiving orientation. This usually occurs during the assembly/disassembly of munitions, but also applies to new/untested munitions until it is proven "safe" or "susceptible." HERO limit 3 applies to "safe" (not susceptible to hazards of electromagnetic radiation) munitions that requires no radio frequency (RF) radiation precautions.

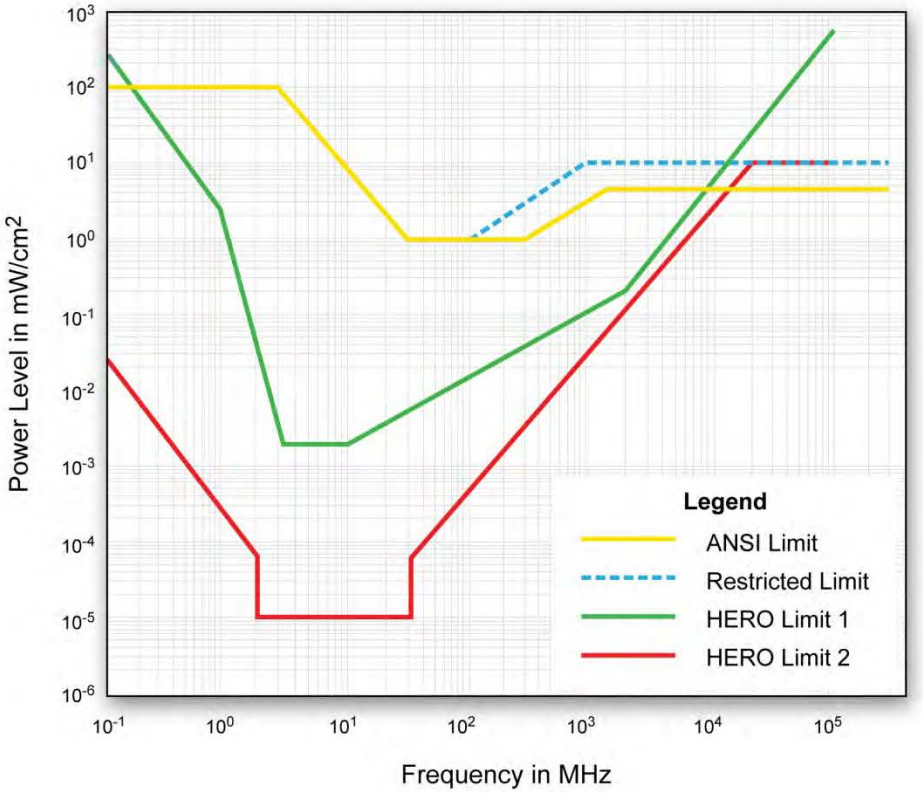
The danger of HERP occurs because the body absorbs radiation, and significant internal heating may occur without an individual's knowledge because the body does not have internal sensation of heat. Thus, tissue damage may occur before the excess heat can be dissipated. As shown in Figure 3.10-5, the current restricted limit is for individuals taller than 55 inches (140 centimeters) because they have more body mass and may be exposed to the higher limit of 10 milliwatts per square centimeter (mW/centimeter^2). Two maximum hazard limits are defined as follows:

- *Controlled Environments* – Personnel are aware of the potential danger of RF exposure concurrently with employment, or exposure that may occur incidental to passage through an area.
- *Uncontrolled Environments* – A lower maximum level where there is no expectation that higher levels should be encountered, such as in living quarters.
- The permissible exposure limits (PELs) are based on a safety factor of 10 times the specific absorption rate that might cause bodily harm. The Federal Communications Commission (FCC) has established specific absorption rate limits for localized exposure to RF (Table 3.10-1).

Table 3.10-1
Specific Absorption Rates

Occupational/Controlled Exposure 100 kHz – 6 GHz	General Uncontrolled Exposure 100 kHz – 6 GHz
< 0.4 W/kg whole body	< 0.08 W/kg whole body
≤ 8 W/kg partial body	≤ 1.6 W/kg partial body

Source: FCC 1999.

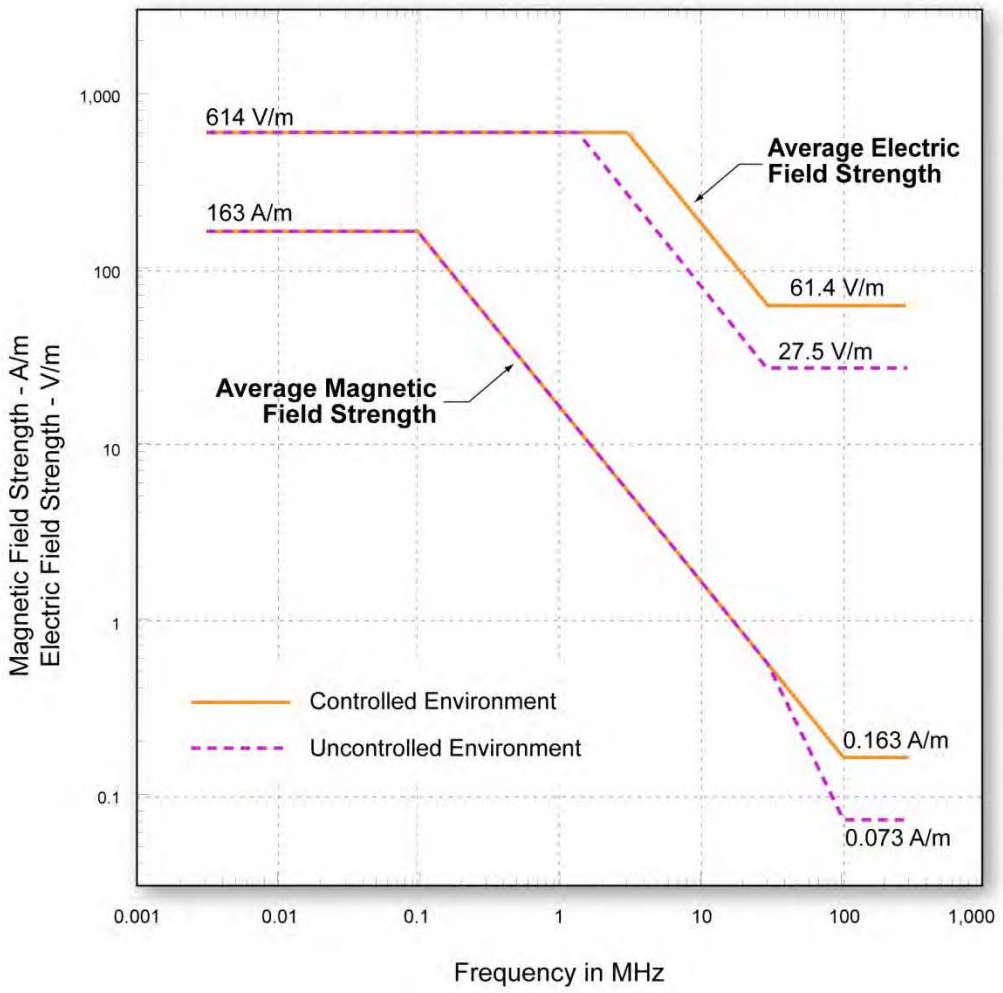


CHINALAKEEIS/059

Radiation Hazards to Ordnance and Personnel

Source: Navy Regulation NAVSEA OP 3565/NAVAIR 16-1-529.

Figure 3.10-4



CHINALAKEEIS060

Lower Frequency Hazards of Electromagnetic Radiation to Personnel (HERP)

Source: DoD Instruction 6055.11.

Figure 3.10-5

The term PEL is equivalent to maximum permissible exposure and RF protection guidelines found in other publications. There are several exceptions to the maximum limits in Figures 3.10-5 and 3.10-6 (in some cases, higher levels are permitted):

- HPM systems exposure in a controlled environment that has a single pulse or multiple pulses lasting less than 10 seconds and has a higher peak E-field limit of 200 kilovolts per meter (kV/m). An E-field is the electric field component of an electromagnetic wave expressed in volts per meter.
- Electromagnetic pulse simulation systems in a controlled environment for personnel who are exposed to broadband RF limits are limited to a higher peak E-field of 100 kV/m.
- Electromagnetic pulse simulation systems in a controlled environment for personnel who are exposed to broadband (0.1 megahertz [MHz] to 300 gigahertz [GHz]) RF are limited to a higher peak E-field of 100 kV/m.
- The given limits are also increased for pulsed RF fields. In this case, the peak power density per pulse for pulse durations of less than 100 milliseconds and no more than 5 pulses in the period is increased to PEL = PEL x T Pulse AVG / 5 x Pulse Width, and the peak E-field is increased to 100 kV/m. If there are more than 5 pulses or they are longer than 100 milliseconds, a time averaged P should not exceed that shown in Figure 3.10-5.
- A rotating or scanning beam likewise reduces the hazard, so although an on-axis hazard might exist, there may be none with a moving beam. The power density (PD) may be approximated with PD = PD (2 x Beam Width / scan angle) scan fixed.
- Many other special limitations also apply, such as higher limits for partial body exposure. Additional information can be found in DoD Instruction 6055.11, *Protecting Personnel from Electromagnetic Fields* (DoD 2009a). Field measurements may be taken in accordance with Institute of Electrical and Electronics Engineers C95.3-1991 (IEEE 1991).

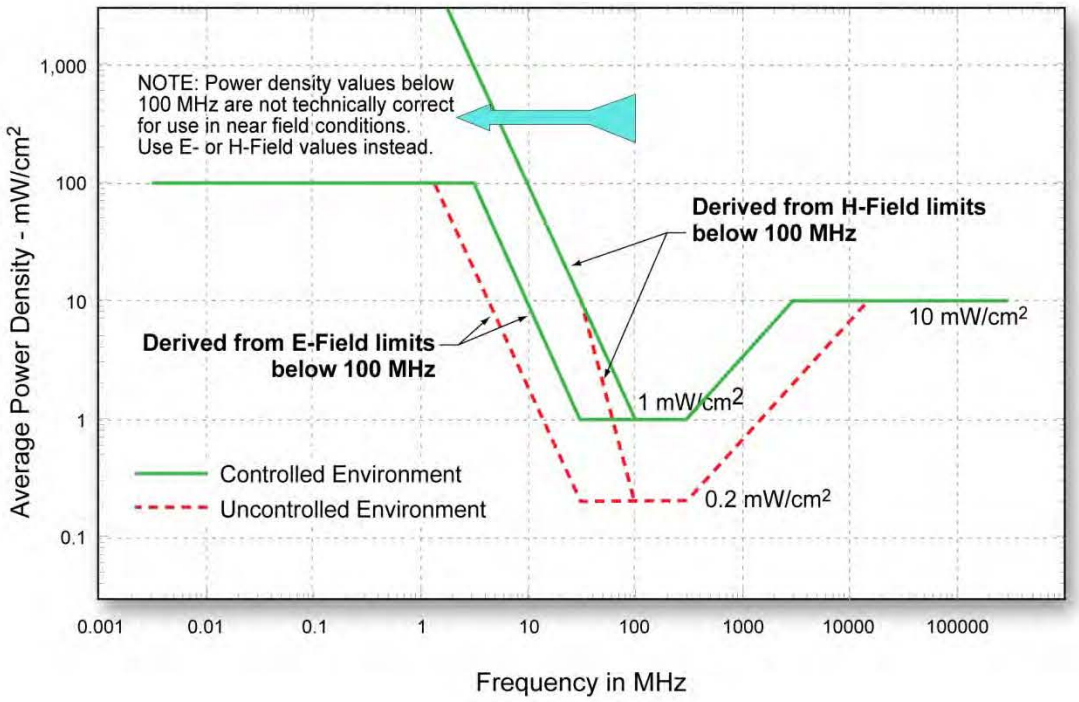
The PELs listed in Figures 3.10-5 and 3.10-6 were selected for an average RF exposure time at various frequencies. In a controlled environment, this averaging time was selected as 6 minutes for 0.003 to 15,000 MHz. If the exposure time is less than 6 minutes, then the level may be increased accordingly.

Similar time-weighted averages apply to uncontrolled environments, but vary enough with frequency such that the DoD Instruction 6055.11 should be consulted. Special training is required for individuals who work in areas that emit RF levels that exceed the uncontrolled levels. Warning signs are also required in areas that exceed either the controlled or uncontrolled limits.

Although E-Field, H-Field, and power density can be mathematically converted in a far-field plane wave environment, the relations provided earlier do not apply in the near field; consequently, the E- or H-field strength must be measured independently below 100 MHz. An H-field is the magnetic field component of an electromagnetic wave expressed in units of amperes per meter (A/m). Lower RF limits in DoD Instruction 6055.11 on HERP are in average (root mean square) E-field values. Upper frequency restrictions are based on average (root mean square) values of power density in both regulations except under certain circumstances. Table 3.10-2 shows the relationship of power density in commonly used units for free-space, far-field conditions.

Some general guidelines regarding RF hazards are as follows:

- Do not energize a transmitter (radar/communications) on an aircraft or motor vehicle being fueled or on an adjacent aircraft or vehicle;
- Do not make or break any electrical, ground wire, or tie-down connector while fueling;



CHINALAKEEIS062

Hazards of Electromagnetic Radiation to Personnel (HERP) Limits

Source: DoD Instruction 6055.11.

Figure 3.10-6

Table 3.10-2
Power Density Conversion Table
for Free-Space Far-Field Conditions

W/m^2	mW/cm^2	$\mu W/cm^2$	V/m	A/m
0.01	0.001	1	2	0.005
0.1	0.01	10	6	0.015
1.0	0.1	100	20	0.005
10	1.0	1,000	60	0.15
100	10	10,000	200	0.5
1,000	100	100,000	600	1.5
10,000	1,000	1,000,000	2,000	5

A = amperes, cm = centimeters, m = meters, µW = microwatts, W = watts

- Radars capable of illuminating fueling areas with a peak power density of 5 watts per centimeter (W/centimeters) should be shut off;
- Antennas radiating 250 watts or less should be installed at least 50 feet (15 meters) from fueling areas; and
- For antennas that radiate more than 250 watts, the power density at 50 feet (15 meters) from the fueling operation should not be greater than the equivalent power density of a 250-watt transmitter located at 50 feet (15 meters).

3.10.8.2 Radar Use

Radar safety areas are defined for specific radar installations. Potential safety risks to personnel are limited, in most cases, by locating radars on high towers so that no hazard occurs at ground level, and through operating procedures that have been designed to control the exposure of radiation hazards to personnel. Warning procedures, such as fences and flashing red lights, are used to keep personnel from entering the hazard area.

Most of the Installation's aircraft contain radar and laser optic equipment. Aircraft using the Randsburg Wash test area and the Mojave B Range can generate high-energy electromagnetic emissions associated with guidance systems, detection systems, or electronic attack-evasion systems. Tests are conducted in compliance with NAWSCL safety procedures. Ground personnel either are evacuated from the area during tests or are positioned in specially shielded facilities. Strict control of access to the test area, coupled with large amounts of landspace and airspace, serve to minimize potential hazards.

3.10.9 Tomography Activities

NAWSCL uses ionizing radiation (X-ray) at several facilities, including the High Energy Computerized Tomography facility located at Salt Wells (used for nondestructive test inspection of munitions items). Personnel hazards are controlled for indoor operations by standard procedures and medical surveillance that include the use of shields and personnel film badges that record radiation exposure levels (U.S. Navy 2004a).

3.10.10 Laser Activities

NAWSCL has accommodated the use of laser systems on the range and has established specific areas for the conduct of laser RDAT&E and training activities. Rigorous standard procedures have been established to ensure that safety requirements continue to be implemented for RDAT&E and training events. RDAT&E or training events using laser systems are conducted in accordance with the RSM and must receive approval by the Range Laser System Safety Officer. Detailed test plans are required for the conduct of each event for ground-based and airborne systems. Laser hazard areas are established for each test event, clearly showing the areas on the ground where personnel may be exposed to laser hazards during a test. Laser safety footprints, always within Installation boundaries, are established based on the maximum safe range for exposed personnel and the ability to control the pointing angles of the laser system. Appropriate eyewear is required for personnel with the potential to be exposed to laser hazards.

Before any lasers are used at NAWSCL, activities must comply with OPNAVINST 5100.27B (U.S. Navy 2008a), Marine Corps Order 5104.1C Navy Laser Hazards Control Program and approved by the NAWCWD Range Laser System Safety Officer (RLSSO). This OPNAVINST incorporates the industry standard, ANSI Z136.1, Safe Use of Lasers, into its requirements (ANSI 2007). In addition to OPNAVINST 5100.27B, NAWCWD implements a detailed Risk Hazard Assessment (RHA)/SOP process prior to the use of laser systems on the ranges. To allow a full evaluation of risks and safety considerations, and permit the planning and preparation for laser activities, the following data must be provided: a written description of test objectives, how laser(s) or laser system(s) would be used, and people involved. If it is determined that the range can support the test, then the following would be required or developed:

- Detailed test plan(s) describing objectives, risks, and hazard zones;
- Layout diagram(s), if applicable, of the test scenario showing land sites, surface craft and/or aircraft locations, maneuver patterns, altitudes, time lines, and targets;
- SOPs governing the use of the system(s) during the test or training events; and
- Qualification/certification statements for operators of the laser system(s).

A team of NAWCWD engineers, scientists, and RLSSO reviews every step of planned laser tests, and if there are any risks or safety considerations that have not been addressed or mitigated, the test does not proceed. If analysis indicates that the range can safely accommodate the proposed event, the RLSSO generates a range safety approval (RSA) for the program.

Additionally, the DoN's Laser Safety Review Board provides a systems safety review of DoN lasers used in combat, combat training, or for purposes that are classified in the interest of national security, and of lasers capable of exceeding Class 3A levels. Guidance relating to laser safety on military ranges is contained in MIL-HDBK-828B, *Department of Defense Handbook: Range Laser Safety*; ANSI Z136.6 (2007), *Safe Use of Lasers Outdoors*, also contains guidance and recommended practices.

The Laser Safety Review Board is composed of the Bureau of Medicine and Surgery, which serves as the Administrative Lead Agency; Marine Corps Headquarters; the Naval Safety Center; the lead DoN technical laboratory for lasers; and systems commands, such as NAVAIR and NAVSEA. The lead technical laboratory for the DoN is the Navy Surface Warfare Center Dahlgren Lab, based on expertise in lasers and laser safety. Navy Surface Warfare Center Dahlgren Lab's head of the lead DoN technical laboratory also is a sitting member of multiple ANSI Z136 subcommittees focused on the safe use of lasers.

- **General Laser Control Measures.** General laser control measures have been established for the protection of scientists, DoN personnel, and the public. These include laser safety analysis, SOPs, safety buffer zones, remote viewing and operation, range control measures (barriers and warning systems), interlock controls, target backstops, and administrative controls. These measures would apply to the Proposed Action and are described as follows:

- *Laser Safety Analysis*. A prerequisite prior to each test is a laser safety analysis that quantifies potential ocular and skin hazards and provides recommendations for their mitigation.

- *Laser System SOPs*. As required by MIL-HDBK-828B, *Department of Defense Handbook: Range Laser Safety*, each laser system and designated firing must have an SOP developed and approved. This SOP designates the individual(s) responsible for the safe operation of the laser system, the specific control measures employed to minimize unintended exposures, conditions under which the laser system may be operated, appropriate personal protective equipment for operators, and the specific nominal ocular hazard distance and Nominal Hazard Zone. Each laser system SOP must be submitted to the DoN's Laser Safety Review Board and the NAWCWD RLSSO for approval; only after approval may the laser test be conducted. SOPs require laser safety training and medical surveillance for the operators to ensure their health and safety.

- *Safety Buffer Zone (Laser Hazard Cone)*. Range control measures include use of safety zones from which personnel are excluded during testing. In accordance with laser range operational procedures, horizontal and vertical buffer zones are established prior to lasing activities.

- *Administrative Controls*. Access to laser operating areas is restricted to authorized and properly trained personnel only, which reduces the possibility of inadvertent exposure to laser radiation. Prior to any lasing activities, and in accordance with laser SOPs, the area is swept to clear it of unauthorized personnel. In addition, prior to lasing activities, materials with reflective surfaces are either cleared from the area or otherwise covered/obscured to minimize reflective hazards. Each laser system has SOPs established for its use to ensure operational safety. Signs indicating a laser controlled area are posted in accordance with ANSI Z136.1 specifications for the operation of Class 4 lasers. Additional administrative controls are outlined in ANSI Z136.1, Safe Use of Lasers, which has been adopted by DoD as the governing standard for laser safety.

- *Barriers and Warning Systems*. Barriers are erected before tests to exclude personnel from the laser controlled area. Various types of warning systems, such as warning lights (flashing siren and light) and audible sirens and alarms are initiated prior to testing to alert personnel of the pending laser operation.

- *Remote Operation*. Personnel operate laser systems from remote locations because safety procedures require that personnel be a safe distance from the operating laser systems. The laser system is connected to a computer system, allowing the operators and technicians to monitor operation and measurement instruments in a safe manner. The nominal ocular hazard distance and Nominal Hazard Zone are determined for each laser system to ensure that the operators, as well as other personnel and the general public, are located beyond the distances where skin or ocular hazards are present, including specular (highly reflective, such as from a mirror) or diffuse reflection of laser energy.

- *Laser Safety Interlock Controls*. Safety interlocks work through an instantaneous feedback loop to cut off the power to an emitting laser if a single mechanical or electrical component fails or if the laser beam strays from the anticipated beam path. For example, lower power beams are initially used to validate that the center of the intended target is being illuminated when fired upon. Validation is accomplished by calorimeter sensors placed around the intended aim point of the target. The sensors detect the position of the narrow laser beam by fractions of an inch relative to the center of the aim point. The laser beam is then intentionally made to drift off target, to check the sensors. If the laser beam veers off the intended path, the beam heats up the calorimeter sensors, which in turn sends a signal that the laser is off-target and instantaneously turns off the power to the laser. Another safety interlock example is a system that must be engaged to allow

power to flow to the laser system, such as a magnetic connection between a closed door and the door frame leading into the area where the laser system is operated. If this door is opened, then electrical power is disconnected from the system and the laser system cannot operate.

- *Laser Backstops*. A laser beam is composed of light, which, if it encounters no obstacle, can continue traveling in a straight line to infinity. To prevent any chance of a laser beam traveling farther than the test requires and into an uncontrolled/uncleared area, the natural terrain on NAWSCL is used as a backstop. To minimize reflected laser energy, materials and objects associated with the target—for example, a stand holding it in place—are painted with or composed of light-absorbing materials.

- *Air-Space Clearance*. Laser activities that have the potential of creating hazards to aircraft would be coordinated with FAA to ensure that when the laser is fired, non-participating aircraft are not in the hazard area.

- *Predictive Avoidance*. Coordination with the Laser Clearinghouse would occur with each laser testing event. Laser beams would be directed at -2º below the horizon (to dissipate beam energy in earthen or built-up backstops) or 26º above the horizon to ensure that the beam exits the restricted airspace over NAWSCL boundaries at an elevation of 60,000 feet (18,300 meters) above ground level (to ensure no impacts to aircraft).

Non-Beam Control Measures. Potential non-beam hazards associated with the use of lasers, along with the health and safety measures in place to minimize these hazards, are described below.

- *Electrical Accidents*. Operators of the laser systems have many controls in place, including electrical interlocks, ground fault circuit interrupters, proper grounding, and SOPs outlining how to operate the system to minimize the possibility of electrical accidents.

- *Fire Hazard*. The irradiation of objects by a Class 4 laser beam presents a fire hazard; however, targets are constructed of flame-retardant material, as defined by the National Fire Protection Association, thus minimizing the potential fire hazard. Furthermore, the control of the beam path and target area minimizes the potential for any resulting fires to spread beyond the immediate target area.

- *Collateral Radiation*. Potential collateral radiation or broad-band black-body radiation (i.e., ultraviolet or blue light) produced as a result of air breakdown at the laser/target interface does not present an immediate hazard to personnel, because no personnel would be within close proximity to the target impact area. Once lasing activities stop, collateral radiation (if any) ceases, and no residual collateral radiation remains.

3.10.11 Munitions Use

NAWSCL ranges have been used extensively for missions that involved the use of HE munitions. Munitions debris and MPPEH are routinely cleared from the range following RDAT&E events, but unexploded ordnance (UXO) may still remain on range. UXO is defined as explosive munitions that has been primed, fused, armed, or otherwise prepared for action and has been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, personnel, or material, and remains unexploded. Prior to transport, UXO found on range is rendered safe and is then considered material potentially presenting an explosive hazard (MPPEH).

UXO and MPPEH on NAWSCL ranges are managed in accordance with DoD Directive 4715.11, Environmental and Explosives Safety Management on Department of Defense Active and Inactive Ranges within the United States and NAWSINST 8020.15, Range Management Plan. NAWSCL has implemented extensive efforts to manage UXO and MPPEH throughout the ranges to ensure the safety of persons using the ranges. Figures 3.10-4 and 3.10-5 show the general locations of historic concentrated

munitions use on the North Range and South Range, respectively. Tenant organizations are responsible for performing clearance of MPPEH following individual tests or series of tests, in accordance with the above guidance.

Currently, HE munitions testing at NAWSCL is conducted primarily on Airport Lake, with occasional use of target impact areas on Baker, Charlie, George, Coso, Coso targets, and the Randsburg Wash LMUs. Munitions clearance (collection and detonation) for active range activities is a standardized part of RDAT&E activities. Range clearance activities are not regulated under RCRA regulation per the USEPA Military Munitions Rule (62 Federal Register 6621, February 12, 1997). EOD/UXO crews have primary responsibility for cleanup from current RDAT&E and training on the North Range and to clear munitions from areas of historical contamination as time and budgets permit. Additionally, Range Operations and Ordnance Test and Evaluation personnel also clear MPPEH on ranges. On the South Range, most munitions expenditures are for training exercises on the Superior Valley Training Range. An EOD crew periodically clears munitions items from Superior Valley and other South Range sites as time and budgets permit. MPPEH items that are visually free of energetic materials are accumulated at MPPEH Collection Facilities located on George Range and at Superior Valley. Metal MPPEH that is documented as safe is recycled at a scrap metal dealer.

This page intentionally left blank.

3.11 HAZARDOUS MATERIALS AND WASTES

This section describes the management of hazardous materials and wastes, and the IRP and Military Munitions Response Program (MMRP) at NAWSCL. Asbestos, polychlorinated biphenyls (PCBs), storage tanks, pesticides, and lead are also discussed. UXO is discussed in Section 3.10, Public Health and Safety.

Hazardous materials management refers to the handling of hazardous materials and includes the purchase, storage, and distribution of hazardous materials such as paints, solvents, lubricants, and batteries. Hazardous waste management refers to the handling of hazardous wastes generated as part of industrial activities. These wastes must be containerized, labeled, stored, and transported in accordance with USEPA, state, and DoN requirements.

3.11.1 Region of Influence

The ROI for hazardous materials and wastes includes areas within NAWSCL boundaries. Any potential impacts from hazardous materials or wastes are expected to be limited to this ROI.

3.11.2 Regulatory Framework

3.11.2.1 Hazardous Materials

As defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (42 U.S.C. § 9601 et seq., Sections 101[14] and 101[33]) and the Superfund Amendment and Reauthorization Act (SARA) of 1986, (P.L. 99-499), a hazardous substance is a substance, pollutant, or contaminant that, due to its quantity, concentration, or physical and chemical characteristics, poses a substantial present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. Hazardous materials are managed in accordance with Title III of SARA, also known as the Emergency Planning and Community Right to Know Act (EPCRA). EPCRA establishes different reporting and planning requirements for businesses that handle, store, or manufacture certain hazardous materials. These plans and reports provide federal, state, and local emergency planning and response agencies with information about the amounts of chemicals that businesses use, routinely release, and spill. Specific requirements of EPCRA include the following:

- Planning for emergency response (Sections 301–303);
- Reporting chemical inventory (Sections 311 and 312);
- Reporting ongoing releases of toxic chemicals (Section 313); and
- Reporting leaks and spills (Section 304).

DoN policy is to comply with the EPCRA as required by EO 13148 and to encourage compliance with state and local EPCRA programs to the extent that resources allow and where such compliance does not interfere with command mission accomplishment or other legal obligations.

3.11.2.2 Hazardous Wastes

The RCRA of 1976 (42 U.S.C. § 6901 et seq., Title 40 of the CFR Parts 240–280) and the Hazardous and Solid Waste Amendments (HSWA) of 1984 (P.L. 98-616) define hazardous waste as a waste, or combination of wastes, that, due to its quantity, concentration, or physical, chemical, or infectious characteristics, may either (1) cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness, or (2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, disposed of, or otherwise

managed. A waste is hazardous if: it is not excluded from regulation as a hazardous waste (40 CFR § 261.4[b]); exhibits any ignitable, corrosive, reactive, or toxic characteristic; or is listed in Subpart C of the RCRA.

In California, the Department of Toxic Substances Control (DTSC) administers most aspects of the RCRA directly. However, beginning in 1997, the California Environmental Protection Agency (EPA)/DTSC delegated oversight of basic generator requirements to the local Certified Unified Program Agencies (CUPAs). The California Hazardous Waste Control Law provides a separate regulatory framework for hazardous waste management within the state. This state framework incorporates federal RCRA requirements, plus a number of requirements that are more stringent than the federal standard.

Since the adoption of the Federal Facilities Compliance Act of 1992, federal agencies that generate or manage hazardous waste are now subject to fines and penalties under RCRA.

The basic requirement of both the federal and state programs is the "cradle-to-grave" management of hazardous waste. This management system establishes requirements for each of the following:

- Hazardous waste identification that facilitates the proper identification and classification procedures of hazardous waste;
- Hazardous waste generation that ensures proper and safe hazardous waste management at those facilities that generate hazardous waste;
- Hazardous waste transport that governs the transport of hazardous waste between management facilities; and
- Hazardous waste treatment, storage, and disposal that establish generic facility provisions governing hazardous waste management units and additional precautions designed to protect soil, groundwater, and air resources.

3.11.2.3 Energetic Hazardous Waste and Energetic Range Residue

In 1992, the Federal Facility Compliance Act was signed into law. This law required USEPA, in consultation with DoD and the states, to publish regulations that identify when conventional and chemical military munitions become waste and subject to RCRA, and to provide for the safe storage and transportation of such waste. These regulations, titled the Military Munitions Rule (MMR) (62 CFR 6621, February 12, 1997), became effective at the federal level on August 12, 1997.

The DoD guidance for implementation of the MMR was published on July 27, 1998, and is known as the Navy Military Munitions Rule Implementation Policy (MRIP). California has not yet adopted the MMR. However, the MRIP specifies that the definition of when a military munition becomes waste be applied to DoD installations immediately.

3.11.2.4 Asbestos

Federal and state laws address the health risks of exposure to asbestos and asbestos-containing materials (ACM). These laws are discussed below.

Toxic Substances Control Act (1976)
The Toxic Substances Control Act (TSCA) provides restrictions on the manufacture, production, and sale of asbestos. Amendments to the TSCA have focused specifically on the hazards of asbestos in schools and in other public and commercial buildings, and imposed training and accreditation requirements for asbestos workers.

Occupational Safety and Health Act
The federal Occupational Safety and Health Act provides protection to most workers exposed to asbestos in the workplace. These requirements are implemented in the state by Occupational Safety and Health Administration (OSHA).

Clean Air Act (Section 112, as amended, 42 U.S.C. § 7401 et seq.)
USEPA regulates asbestos as a hazardous air pollutant under the federal CAA, and issued a National Emissions Standards for Hazardous Air Pollutants (NESHAP) for asbestos that includes the following:

- Requirement of control devices and fugitive emission monitoring, record keeping, and reporting for asbestos milling, manufacturing, and fabricating operations;
- Regulation of the demolition and renovation of facilities that have ACM; and
- Establishment of comprehensive asbestos waste disposal requirements.

NESHAP requires zero visible emissions to the outside air from activity relating to the transport and disposal of asbestos waste. ACM waste must be wet and sealed in leak-proof containers. The containers must be marked with OSHA-specified labels. The federal RCRA does not regulate ACM waste as hazardous, but California does. Asbestos waste may be disposed of at landfills that are permitted to receive such waste.

3.11.2.5 Polychlorinated Biphenyls

PCBs are compounds that are a subset of synthetic organic chemicals known as chlorinated hydrocarbons. There are 209 PCB isomers and compounds (congeners), which range from oil liquids to crystalline solids and hard resins. PCBs have unique properties that include non-flammability, chemical stability, low electrical conductance, and high lipophilicity. A mix of these various properties have historically made PCBs suitable for use as dielectric fluids, heat transfer fluids, hydraulic fluids, oils, solvents, paints, coatings, and carbonless paper. PCBs also are found as impurities in manufacturing byproducts and in materials on which they are applied, such as sludges, slurries, and sediments.

PCBs and PCB waste are subject to the TSCA and regulations (40 CFR Part 761) implemented by USEPA. Additionally, DoN requires that activities comply with OPNAVINST M-5090.1, which requires that DoN shore activities that generate, treat, store, or dispose of PCBs inventory or validate PCBs and PCB items annually and update spill contingency plans accordingly. OPNAVINST M-5090.1 states that by October 1998, all electrical equipment (transformers, voltage regulators, switches, capacitors) containing PCB concentrations of 500 ppm or more should be removed from service and be disposed of, and that by 2003, any transformers containing PCB concentrations of 50 ppm or more be replaced or removed. However, in accordance with federal and state laws, these items can remain in use as long as they are not leaking and meet certain other requirements. PCB-contaminated waste items are disposed of in accordance with the TSCA and applicable federal RCRA regulations, as well as corresponding state regulations.

3.11.2.6 Underground Storage Tanks

Underground storage tanks (USTs) of petroleum, petroleum products, and other hazardous substances are subject to federal regulations under the RCRA (40 CFR § 280), as mandated by the HSWA. California's UST law adopted under Title 23, Division 3, Chapter 16 of the California Code of Regulations was originally adopted in 1983 and has been amended many times since. USTs containing hazardous waste, specifically, also fall under state (and federal) RCRA standards (22 California Code of

Regulations, Division 4.5, Chapter 15, Article 10). State standards now conform to evolving federal standards under the federal UST law, while retaining additional unique state requirements.

USEPA is formally responsible for administering federal UST requirements in California. However, USEPA leaves the day-to-day regulation to the state. The SWRCB provides statewide guidance for UST regulation, which is administered by RWQCBs in cooperation with local CUPAs. Federal and state UST regulations establish technical requirements for registering, installing, monitoring, detecting leaks, release reporting, corrective action, record keeping, and closure.

3.11.2.7 Aboveground Storage Tanks

California regulates aboveground storage tanks (ASTs) containing petroleum under the California Above-Ground Petroleum Storage Act (CH&SC §25270 et seq.). The primary purpose of this act is to ensure that facilities comply with Spill Prevention Countermeasure and Control Plan requirements. The SWRCB provides statewide guidance for AST regulation, which is administered by the RWQCBs in cooperation with local CUPAs.

In addition, ASTs are regulated under the Uniform Fire Code and National Fire Protection Association regulations. ASTs containing hazardous wastes also fall under state (and federal) RCRA standards (22 California Code of Regulations, Division 4.5, Chapter 15, Article 10).

3.11.2.8 Pesticides

Federal law requires comprehensive regulation of the manufacture, transport, storage, and use of pesticides. USEPA, in cooperation with state and local agencies, implements the basic federal regulatory framework governing pesticides under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (40 CFR § 152 et seq.). This law was initially enacted in 1947 and has been amended several times, most recently in 1996. The FIFRA requires the registration and classification of pesticides, and prescribes controls over their application and use.

California's pesticide laws that are contained in California Code of Regulations Title 3, Chapter 4, incorporate FIFRA's federal standards and definitions, and provide additional detailed state regulations that complement the FIFRA.

3.11.2.9 Lead

On the federal level, the use and management of lead paint is regulated under Section 1017 of the Residential Lead-Based Paint Hazard Reduction Act of 1992 (40 CFR Part 745). Section 1017 is often referred to as Title X ("Title Ten") because it was enacted as Title X of the Housing and Community Development Act of 1992. Section 1017 requires the Secretary of the U.S. Department of Housing and Urban Development to issue "guidelines for the conduct of federally supported work involving risk assessments, inspections, interim controls, and abatement of lead-based paint hazards." This document is known as "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing." The maximum lead content was reduced to 0.06 percent of newly applied dry paint.

Lead in drinking water is regulated by the Lead and Copper Rule of 1991. The purpose of the rule is to ensure that the levels of lead remain below the levels associated with health risks in tap water. Under the rule, public water systems must comply with the control of lead (and copper). Corresponding DoN regulations (OPNAVINST M-5090.1) apply these requirements to DoN installations.

In addition, DoN policy (OPNAVINST M-5090.1) prohibits the use of lead pipe, solder, or flux in the installation or repair of any public water system or plumbing in residential or nonresidential facilities providing water for human consumption.

Lead-contaminated waste items are disposed of in accordance with applicable federal RCRA regulations and corresponding state regulations.

3.11.3 Installation Restoration and Military Munitions Response Program

In 1980, DoD initiated the IRP to identify, investigate, and clean up or control the release of hazardous substances from past waste disposal activities and hazardous materials spills at military facilities. Concurrent with formation of the IRP, Congress passed CERCLA in December 1980, which directed USEPA to develop and implement a comprehensive national program to manage past disposal sites on private property. SARA expanded CERCLA to cover federal facilities under the Defense Environmental Restoration Program (DERP). This provides funding and management structures for the IRP/MMRP, building demolition, and hazardous waste minimization. In September 2001, DoD added the MMRP to the DERP in order to manage environmental responses to UXO, discarded military munitions, and munitions constituents. The MMRP examines the potential for contamination from abandoned munitions and munitions constituents rather than the explosive nature of munitions. DERP provides for compliance with CERCLA requirements, as amended by SARA, as well as regulations issued under these acts or by state law. DERP also complies with applicable, or relevant and appropriate, regulations under other federal and state environmental laws. OPNAVINST M-5090.1 provides DoN policy for identifying, investigating, and restoring contaminated sites.

3.11.4 Management Practices

3.11.4.1 Hazardous Materials

The EMD of NAWSCL oversees pollution prevention functions, and is responsible for planning and implementing aspects of the Installation's comprehensive Pollution Prevention Program. This program complies with applicable laws, EOs, and regulations. This includes the following items:

- Developing and implementing short- and long-term plans for the Pollution Prevention Program to ensure compliance with environmental and safety regulations, and monitoring and responding, as required, to hazardous material procurement, acquisition procedures, and data inquiries;
- Developing and implementing plans for an accurate hazardous material inventory and maintaining the corresponding Authorized Use List;
- Meeting aspects of the EPCRA reporting requirements; and
- Providing technical support and administrative oversight to the Recycling and Hazardous Material Recovery Program and conducting hazard communication and specific hazard training as required.

Beginning in October 2011, the Supply Department established a Consolidated Hazardous Material Reutilization and Inventory Management Program. Initially the program was established at Armitage Airfield. To accomplish this activity, Supply Department personnel receive and review notifications of purchases of hazardous materials from the airfield area, identify user and location, develop site-specific processes with the user, assign task identification numbers, enter data in the system, and track items used through final disposal. Supply personnel also coordinate with manufacturers and other agencies to obtain all Material Safety Data Sheets (MSDSs) that apply to ensure that the MSDS Library is maintained.

The EMD also gathers data associated with EPCRA and prepares and disseminates reports in accordance with guidelines set forth by USEPA. The following hazardous-materials-related plans/reports are maintained:

- Chemical Hygiene Plan;
- California Senate Bill 14 Report;
- Ozone Depleting Substance Measures of the Merit Report;
- Risk Management Plan; and
- Pollution Prevention Plan.

3.11.4.2 Hazardous Wastes

A wide variety of hazardous wastes are generated from the diverse activities at NAWSCL, including R&D laboratories, pilot manufacturing facilities, machine shops, vehicle and aircraft maintenance, and aircraft/weapons testing areas. The hazardous wastes generated at NAWSCL consist primarily of waste oil, waste jet fuel, spent absorbent, oily wastewater, contaminated soil, empty containers, photo processing wastes, batteries, miscellaneous laboratory chemicals, paints, solvents, and aerosols. The hazardous wastes generated must be containerized, labeled, stored, and transported in accordance with USEPA, U.S. Department of Transportation, state of California, and DoN regulations and requirements for hazardous waste storage, transport, treatment, and disposal. Recycling of wastes, which include waste oil, waste jet fuels, and hydraulic fluids, is referenced in Section 3.11.4.11, Solid Waste.

Hazardous wastes are accumulated temporarily at satellite areas located at or near the point of generation (i.e., the activity generating the waste), or at 90-day areas located at various areas throughout the Installation. Typically, those hazardous wastes that are temporarily accumulated throughout the Installation are transferred to the NAWSCL RCRA Part B-permitted Hazardous Waste Storage & Transfer Facility (HWSTF). The HWSTF operates under a Hazardous Waste Facility Permit (#01-NC-06) issued by the California EPA's DTSC. The HWSTF provides the capability to safely receive, segregate, transfer, and store hazardous wastes prior to transport off-installation for final disposition. The HWSTF consists of five separate units (one container storage unit and four tank storage units), as described below.

Container Storage Unit
The Container Storage Unit consists of two areas: the Drum Storage Area and the Bin Storage Area. The entire Container Storage Unit, including the Drum Storage Area, the Bin Storage Area, and associated transfer dock, occupies approximately 11,388 square feet (1,058 square meters). Container Storage Unit facilities include protected, segregated storage bays for containers (e.g., 55-gallon [208-liter] drums), a floor drainage system, safety equipment, fire sprinklers, spill containment, laboratory equipment, packaging and storage space, a bin storage area with separate containment for California hazardous wastes only, and a transfer dock. The segregated, containerized hazardous wastes are stored no more than 1 year within the Container Storage Unit before being transported off-site for treatment/disposal. The RCRA Part B permit for the Drum Storage Area of the Container Storage Unit provides a maximum design capacity at any given time of no more than 39,600 gallons (150,000 liters) of waste or 720, 55-gallon (208-liter) containers for up to 1 year. The design capacity of the Bin Storage Area is no more than 80 cubic yards (61 cubic meters). The current permit allows for a maximum annual quantity of hazardous waste that can be stored in the Container Storage Unit of 1,000 tons.

Tank Storage Units
Four 2,000-gallon (7,570-liter) tanks are used for storing liquid petroleum waste within a single area that includes secondary containment. RCRA (D001 ignitable) and non-RCRA waste streams are segregated and stored for no more than 1 year from the point of generation. The RCRA waste stream is generated mainly from vehicle and aircraft maintenance, aircraft defueling (jet fuel), and separated oil and fuel from

oil/water separators. The permitted maximum annual quantity of the 2 RCRA tanks is 41.5 tons each. The non-RCRA waste streams are generated mainly from the periodic maintenance (cleanout) of oil/water separators. Maximum annual quantity of the 2 non-RCRA tanks is 73 tons each. The aboveground tanks are constructed of steel, equipped with a synthetic liner that serves as secondary containment, encased in 6 inches (15.24 cm) of reinforced concrete, and situated inside a concrete pad with a 10-inch (25.4-cm) concrete berm. A loading/unloading area with accompanying containment is located adjacent to the tank concrete pad.

The Part B permit for the HWSTF allows for a maximum annual quantity of 1,458 tons (1,000 tons at the Container Storage Unit, 83 tons in the 2 RCRA tanks, and 146 tons in the 2 non-RCRA tanks). Installation personnel estimated that the HWSTF is operating at approximately 75 percent of annual permitted capacity. Accumulated and stored hazardous wastes at the HWSTF are transported to an off-site RCRA-permitted storage, treatment, or disposal facility under a hazardous waste manifest by a licensed commercial hazardous waste hauler (contracted by the Defense Reutilization and Marketing Office).

California legislation established a five-tier program for facilities that require state authorization to treat hazardous wastes but that do not require a permit under federal hazardous waste regulations. A drum crusher at the HWSTF operates under Tier 4 of the program and is conditionally exempt.

3.11.4.3 Explosive Hazardous Waste and Energetic Range Residue

Application of the MMR to NAWSCL activities is addressed in NAWSINST 5090.1 (series) Environmental Management of Explosive Hazardous Waste and Energetic Range Residue. The instruction includes a detailed guidance document that defines and emphasizes the differences between Explosive Hazardous Waste and Energetic Range Residue, and outlines proper management of Explosive Hazardous Waste and Energetic Range Residue to NAWSCL activities.

As a point of emphasis, the MMR specifically excludes designation of used munitions from RDAT&E activities conducted on a designated range and range clearance activities as waste and, therefore, subject to RCRA regulation. However, energetic hazardous wastes generated from laboratory activities not conducted on a designated range are managed under RCRA regulations.

Explosive Hazardous Waste generated by the NAWSCL mission are destroyed by Open Burn/Open Detonation (OB/OD) on-installation at the Burro Canyon Treatment Facility. The Burro Canyon Treatment Facility operates under the Hazardous Waste Facility Permit (#01-NC-06) issued by the California EPA's DTSC. Explosive Hazardous Waste treated at the OB/OD facility consist of munitions that are no longer needed for their intended purpose of T&E and/or items that are considered obsolete or expired. In addition to munitions waste items, laboratory wastes generated at NAWSCL during the development of new explosives and propellants are also treated. Current annual storage/treatment capacity allowed by RCRA Part B permit is 5,475,000 pounds (2,483,400 kilograms) (based on a maximum daily permitted capacity of one 15,000-pound [6,800-kilogram] OD event per day for an entire year).

3.11.4.4 Installation Restoration and Military Munitions Response Program

NAWSCL is assessing and remediating areas of past contamination on its ranges through the IRP. As a result of 2 installation-wide Preliminary Assessments, 80 IRP sites have been identified and investigated. One site, known as IRP Site 80, Area of Concern (AOC), encompasses 61 small locations throughout NAWSCL.

Of the 80 IRP sites, Site Closeout has been reached at 5 sites, Response Complete has been reached at 10 sites, and Remedy in Place has been reached at 22 sites. Investigations are underway at the remaining sites. The investigations are at various stages, from preparation of work plans, through fieldwork (including soil and groundwater sampling), to completion of technical memoranda documenting the results. Feasibility studies may be conducted if the investigation concludes that the contamination requires remediation. The full list of IRP sites is included in Appendix E.

Five MMRP sites have been identified at NAWSCL. MMRP sites can only be located in areas designated as "other than operational ranges," so the majority of NAWSCL is excluded from the MMRP. The five sites are located in the Armitage Airfield LMU. Preliminary Assessments and Site Inspections have been completed for all five sites. One site has reached the Response Complete stage, and the other four sites require further action.

Smaller areas of potential contamination are investigated as AOCs under IRP Site 80. As of fiscal year 2011, all 61 AOCs have undergone preliminary investigations, and the sites have been ranked for prioritization for further assessment, as needed. These AOC sites are generally considered low priority and, at present, none have been elevated to formal IRP sites. It is anticipated that limited response actions would be necessary for these sites to facilitate closure. AOC sites that are co-located within IRP site footprints are being addressed as part of the larger IRP response actions.

3.11.4.5 Asbestos

Historically, asbestos was used throughout various NAWSCL building structures on both exteriors and interiors. Asbestos is abated, where necessary, when exposed in occupied structures or prior to demolition or renovation. The contractor handling the abatement submits an Asbestos Abatement Plan, which addresses procedures for each abatement on a case-by-case basis. State-certified personnel at NAWSCL review and approve each plan. In addition, certified personnel monitor each abatement to ensure that the abatement contractor is following the Asbestos Abatement Plan. ACM waste is handled and disposed of according to applicable regulations. ACM waste is disposed of only in landfills that are permitted for such waste.

3.11.4.6 Polychlorinated Biphenyls

Comprehensive high-voltage equipment surveys conducted at NAWSCL in 1988 and 1990 identified 2,760 electrical items that contained dielectric fluid. Based on this survey, 965 of 2,760 evaluated were found to contain fluids with PCB concentrations exceeding 50 ppm. As part of the DoN's PCB Elimination Program, all 965 items containing PCBs exceeding 50 ppm were removed from service and properly disposed of. Any items containing PCBs currently in service have concentrations of less than 50 ppm. Any of those items that show signs of leakage are promptly repaired or removed from service and properly disposed of in accordance with applicable federal, state, and local regulations.

NAWSCL has an RCRA-permitted unit for the storage of PCB wastes. The PCB Storage Building is located in the Public Works Department compound and is authorized for the storage of PCB wastes for up to 9 months. This unit is authorized for the storage of state and federal PCB wastes, including containerized fluids, articles (e.g., transformers), and containerized solid wastes (e.g., spill cleanup material). Maximum capacity of this unit is 32 containers (55-gallon [208-liter] drums) and/or articles, or a volume of 1,760 gallons (6,662 liters) of liquid, whichever is less. The maximum permitted quantity of PCB wastes that can be accommodated annually at the PCB Storage Building is 101 tons.

3.11.4.7 Underground Storage Tanks

Currently, five USTs at three different locations (SNORT, Navy Exchange Gas Station [two USTs], and Public Works Gas Station [two USTs]) are used at NAWSCL. Currently operational USTs at NAWSCL were installed after 1992 and comply with the requirements mandated by federal and state regulations.

Known inactive USTs have been removed or closed in place. There are five UST sites where soil or groundwater contamination exists (see Appendix E). Remediation is ongoing at three of the sites: Navy Exchange Gas Station, Public Works Gas Station, and the Old Non-Appropriated Fund Fuel Farm. The sites are in various stages of remediation or site closure.

3.11.4.8 Aboveground Storage Tanks

There are 101 ASTs, 5 generators, and 11 drum sites that are managed in accordance with the California Aboveground Petroleum Storage Act.

3.11.4.9 Pesticides

Pesticide application is handled by a Base Operations and Support Contract (BOSC) subcontractor who is licensed by the state. The subcontractor submits an annual Pesticide Management Plan for approval by NAWSCL contract personnel. These personnel are certified by DoD as Pest Control Coordinators and by the state as licensed applicators and field representatives. Waste items generated from pesticide application are disposed of by the subcontractor according to applicable federal and state RCRA regulations.

3.11.4.10 Lead

Historically, lead was a major base constituent in paint throughout the exteriors and some interiors of NAWSCL building structures. Lead paint is abated, where necessary, when exposed in occupied structures (chipped/cracked paint) or prior to demolition or renovation. The contractor handling the abatement submits a Lead Abatement Plan, which addresses procedures for each abatement on a case-by-case basis. State-certified personnel at NAWSCL review and approve each plan. In addition, certified personnel monitor each abatement to ensure that the abatement contractor is following the Lead Abatement Plan. If lead paint is intact and in good shape, the paint remains in place but is checked periodically by NAWSCL certified personnel.

Historically, lead solder in piping was used throughout NAWSCL (usually on sewer pipelines but not on drinking water lines). NAWSCL complies with the requirements in the Lead and Copper Rule of 1991 by periodically monitoring lead concentrations in drinking water.

Lead waste is handled and disposed of according to applicable regulations. If the concentration is high enough, the waste may be considered hazardous under federal and state RCRA regulations. Lead waste is disposed of only in landfills that are permitted for such waste.

3.11.4.11 Solid Waste

NAWSCL has an active Pollution Prevention Program to reduce the amount of solid waste generated on-installation. The Pollution Prevention Program includes requirements to develop integrated waste management procedures and document these procedures in a Solid Waste Management Plan. The NAWSCL recycling program is an integral part of the Pollution Prevention Program. Table 3.11-1 lists the landfill reduction quantities associated with various types of wastes recycled as part of the program.

Table 3.11-1
Typical Annual Recycling Statistics

Recycled Material	Landfill Reduction (tons)
Batteries	14.9
Paper	1,020.4
Glass	72.1
Oil	171.5
Plastics	18.3
Scrap metal	1,493,252
Total	1,494,550

Notes: Landfill reduction quantities are based on annual statistics; total revenue from recycling was $129,521 in 2002. In addition to the recycled wastes listed above, fuels, oils, and hydraulic fluids are also recycled and sold as alternative fuel. In 2002, approximately 147 tons of fuels, oils, and hydraulic fluids were recycled.

Source: U.S. Navy 2011g.

3.12 TRAFFIC AND CIRCULATION

3.12.1 Region of Influence

The ROI for the traffic and circulation analysis includes the primary road networks in the IWV region, with emphasis on the area immediately surrounding NAWSCL. The analysis focuses on segments of the transportation network that serve as links to NAWSCL and those commonly used by NAWSCL employees.

3.12.2 Planning and Management Practices

Transportation planning for regional highways serving NAWSCL is conducted by Caltrans, the Kern County Council of Governments (COG), and the federal government. As required by the Alquist–Ingalls Act (Assembly Bill 402), the Caltrans State Transportation Improvement Program (STIP) is used by the Kern COG to develop a Regional Transportation Improvement Program (RTIP). The federal government identifies federally funded projects from the STIP and RTIP that will be included in the Federal Transportation Improvement Program.

Transportation planning for NAWSCL is included in the Installation's AOP, Mainsite Master Plan (2010) and NAWSCL Airfield Master Plan (2008). The AOP and Master Plan describe transportation facilities in each planning area, and recommends improvements to those identified as deficient or deteriorated. The Installation Appearance Plan provides design guidelines related to vehicle circulation on the Installation. NAWSCL streets are classified as either primary, secondary, or service, and the Base Exterior Architectural Plan provides guidelines for each classification. The Installation's Capital Improvement Program (CIP) identifies projects necessary to successfully carry out the proposals of the Master Plan. Most of the projects included in the CIP are funded by military construction (MILCON) project funds that require Congressional approval. Funding for roadway improvements is provided separately for administrative and range uses.

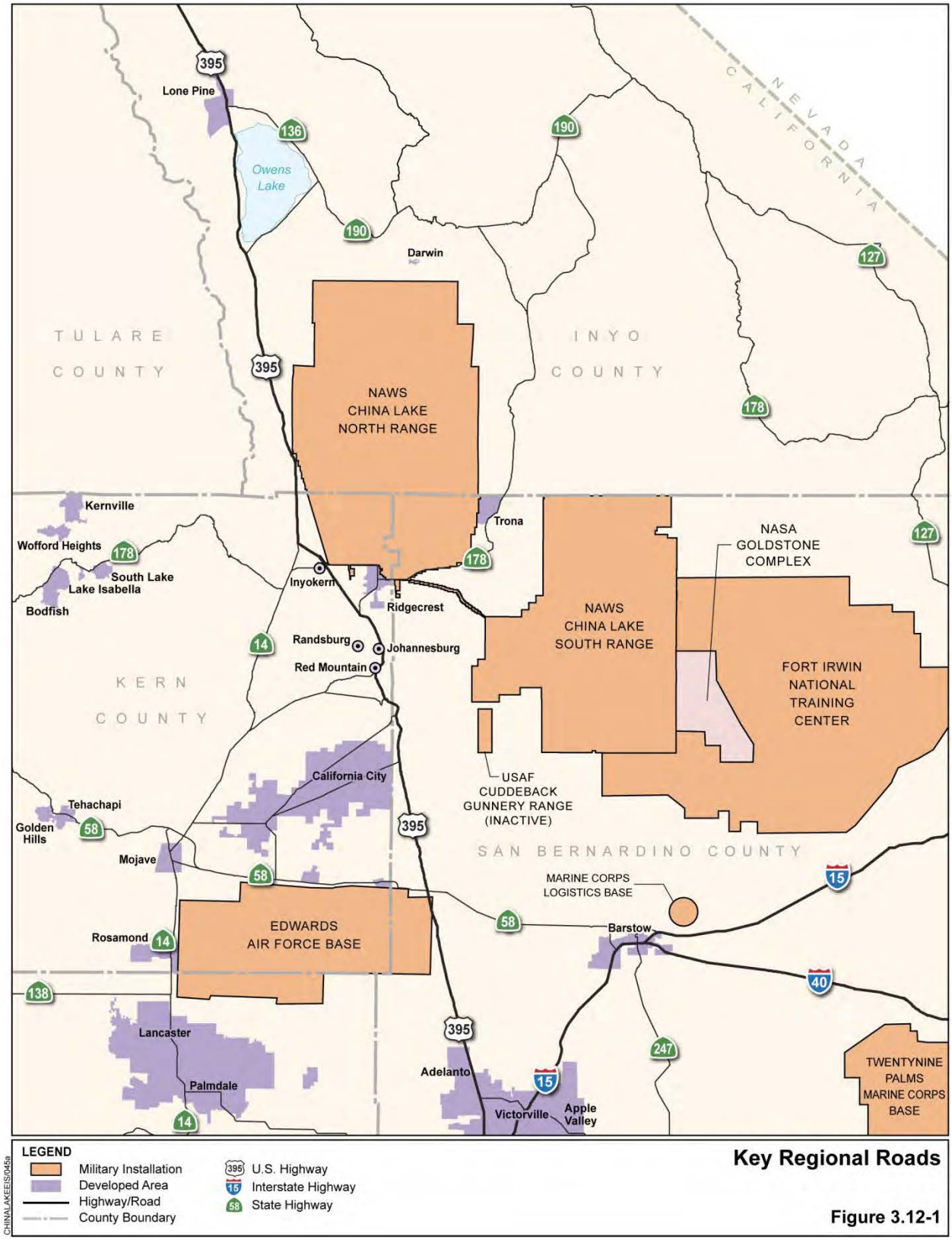
Management of the Installation's roadway system includes ongoing maintenance and some roadway reconstruction. Most roads are two-lane dirt roads that are graded every year, although some roads are graded more frequently to accommodate increased activities (e.g., GTT). Shoulders of the paved roads are graded every quarter. Because of recent funding reductions, maintenance has consisted primarily of grading and patching rather than reconstruction.

3.12.3 Key Regional Roads and NAWSCL Access

The main highways in the NAWSCL region, U.S. Highway 395 (U.S. 395) and California State Highway 14 (SH 14), are shown in Figure 3.12-1. State Route (SR) 178 connects with U.S. 395 and SH 14 east and west of Inyokern, respectively. SR 190 connects with U.S. 395 north of the Installation. The major east/west arterials in the NAWSCL region are East Inyokern Road, and Blandy Avenue. The major north/south arterials in the NAWSCL region are China Lake Boulevard, Sandquist Road, Knox Road, Lauritsen Road, Bullard Road, and North Richmond Road.

3.12.3.1 U.S. Highway 395

U.S. 395 runs north from Interstate 15 near Hesperia and through eastern portions of California; it terminates at the Washington/Canada border. U.S. 395 is a two-lane highway that generally follows the rolling desert terrain and is the main regional access road to NAWSCL from Reno, Las Vegas, and San Bernardino. Access to NAWSCL from San Bernardino to the south and from Las Vegas to the east is via a turn-off from U.S. 395, approximately 5 miles (8 kilometers) south of Ridgecrest. This turnoff connects


395
Lone Pine
136
Owens Lake
190
Darwin
NEVADA
CALIFORNIA
127
TULARE COUNTY
INYO COUNTY
178
NAWS CHINA LAKE NORTH RANGE
Kernville
Wofford Heights
South Lake
Lake Isabella
Bodfish
Trona
NASA GOLDSTONE COMPLEX
Inyokern
Ridgecrest
NAWS CHINA LAKE SOUTH RANGE
14
Randsburg
Johannesburg
Red Mountain
FORT IRWIN NATIONAL TRAINING CENTER
KERN COUNTY
California City
USAF CUDDEBACK GUNNERY RANGE (INACTIVE)
Tehachapi
Golden Hills
58
Mojave
SAN BERNARDINO COUNTY
MARINE CORPS LOGISTICS BASE
15
EDWARDS AIR FORCE BASE
Rosamond
Barstow
40
138
Lancaster
247
Adelanto
Palmdale
Victorville
Apple Valley
TWENTYNINE PALMS MARINE CORPS BASE
LEGEND
Military Installation
Developed Area
Highway/Road
County Boundary
U.S. Highway
Interstate Highway
State Highway
CHINALAKEEIS/045a
Key Regional Roads
Figure 3.12-1

with South China Lake Boulevard. Access to NAWSCL from Reno to the north is via a turn-off from U.S. 395, east onto SR 178, and about 9 miles (14 kilometers) to the NAWSCL Main Gate. The Kern County COG CIP for 2012 through 2016 designates funds to widen U.S. 395 to four lanes through Inyokern (Kern County COG 2008).

3.12.3.2 State Highway 14

SH 14 originates at Interstate 5 in Santa Clarita as a four- and six-lane highway. North of Mojave, SH 14 is a mixture of two and four lanes until it terminates at the intersection with U.S. 395 approximately 5 miles (8 kilometers) northwest of Inyokern. SH 14 is the main regional access road to NAWSCL from Los Angeles and Bakersfield, and is a major tourist and truck route. The Kern County COG CIP for 2011 through 2015 designates funds to widen SH 14 to four lanes from U.S. 395 south to its junction with SR 178 West.

3.12.3.3 State Route 178

SR 178 is the main access road to NAWSCL from Los Angeles and Bakersfield on SH 14 and from Reno on U.S. 395. SR 178 originates in Bakersfield and heads east past Ridgecrest approximately 15 miles (24 kilometers) over the San Bernardino County line. East of NAWSCL, SR 178 heads north and runs into SR 190 near Death Valley National Park. The section of SR 178 from Inyokern to Ridgecrest is also known as Inyokern Road. This portion of the highway is divided into four lanes, with a center two-way left-turn lane at the Ridgecrest city limit. At the NAWSCL Main Gate, Inyokern Road continues east onto NAWSCL, while SR 178 turns south on China Lake Boulevard for 2 miles (3 kilometers) before it turns east on Ridgecrest Boulevard. The Kern County COG CIP designated funds for drainage improvements for the China Lake Boulevard portions of SR 178 in 2011 through 2015 (Kern County COG 2008). Drainage improvements to SR 178 at Richmond Road were completed in 1997.

NAWSCL has requested and supports the declaration of SR 178 in San Bernardino County from milepost 0.0 (County Line Road and East Ridgecrest Boulevard intersection) to milepost 8.4 (Trona-Randsburg Road and SR 178 intersection) as a “Defense Access Road” to be eligible for federal funds for highway projects. The declaration was initiated in June 1994 to facilitate the acquisition of the necessary rights-of-way by the state of California and is ongoing.

3.12.3.4 State Route 190

SR 190 provides access to the northern portion of the North Range. SR 190 originates in Olancha, heads east past the community of Darwin, connects with SR 178, and continues through Death Valley National Park. SR 190 is an undivided two-lane roadway.

3.12.3.5 East Inyokern Road

East Inyokern Road is a collection roadway that runs east/west, extending approximately 2 miles into NAWSCL; it serves as the main access into the Installation. Access to NAWSCL is controlled at the Inyokern Gate just east of Sandquist Road. From the gate to the intersection with Knox Road, which is controlled by a roundabout, East Inyokern Road has four travel lanes. East of Knox Road, East Inyokern Road is reduced to two travel lanes. The posted speed limit is 35 miles per hour (mph) (56 kilometers per hour [kph]), except for the segment between Lauritsen Road and Richmond Road, which is signed as 25 mph (40 kph). West of the Inyokern Gate, the road becomes SR 178 and continues west to SH 14.

3.12.3.6 Blandy Avenue

Blandy Avenue is a two-lane collector roadway that runs in an east/west direction from Sandquist Boulevard to Essex Circle. At the intersection with Sandquist Road, Blandy Avenue is closed to vehicular traffic. The posted speed limit is 35 mph (56 kph).

3.12.3.7 China Lake Boulevard

China Lake Boulevard is a four-lane highway (SR 178) from East Inyokern Road to Ridgecrest Boulevard. North of the intersection of China Lake Boulevard and East Inyokern Road is the Sandquist access gate. North of East Inyokern Road, China Lake Boulevard becomes Sandquist Road. East of this intersection is the main access into NAWSCL via the Inyokern Gate. The posted speed limit is 35 mph (56 kph).

3.12.3.8 Sandquist Road

Sandquist Road is a two-lane collector roadway that runs in a north/south direction beginning at East Inyokern Road and continuing several miles into NAWSCL. Access to NAWSCL is controlled at the Sandquist Gate, just north of Blandy Avenue and East Inyokern Road. At Lauritsen Road, the posted speed limit is 55 mph (88 kph). South of East Inyokern Road, Sandquist becomes China Lake Boulevard (SR 178).

3.12.3.9 Knox Road

Knox Road is a two-lane collector roadway that runs in a north/south direction beginning at Hayward Avenue and continuing north for several miles. The intersection with East Inyokern Road is controlled by a roundabout. The posted speed limit is 30 mph (48 kph).

3.12.3.10 Lauritsen Road

Lauritsen Road is a two-lane collector roadway that generally runs in a north/south direction and connects the northwestern part of NAWSCL with the south side of the Installation. The posted speed limit is 45 mph (72 kph) north of Nimitz Avenue and 30 mph (48 kph) south of Nimitz Avenue. Access to the northern part of NAWSCL is controlled by an access gate located between Knox Road and Hussey Road.

3.12.3.11 Bullard Road

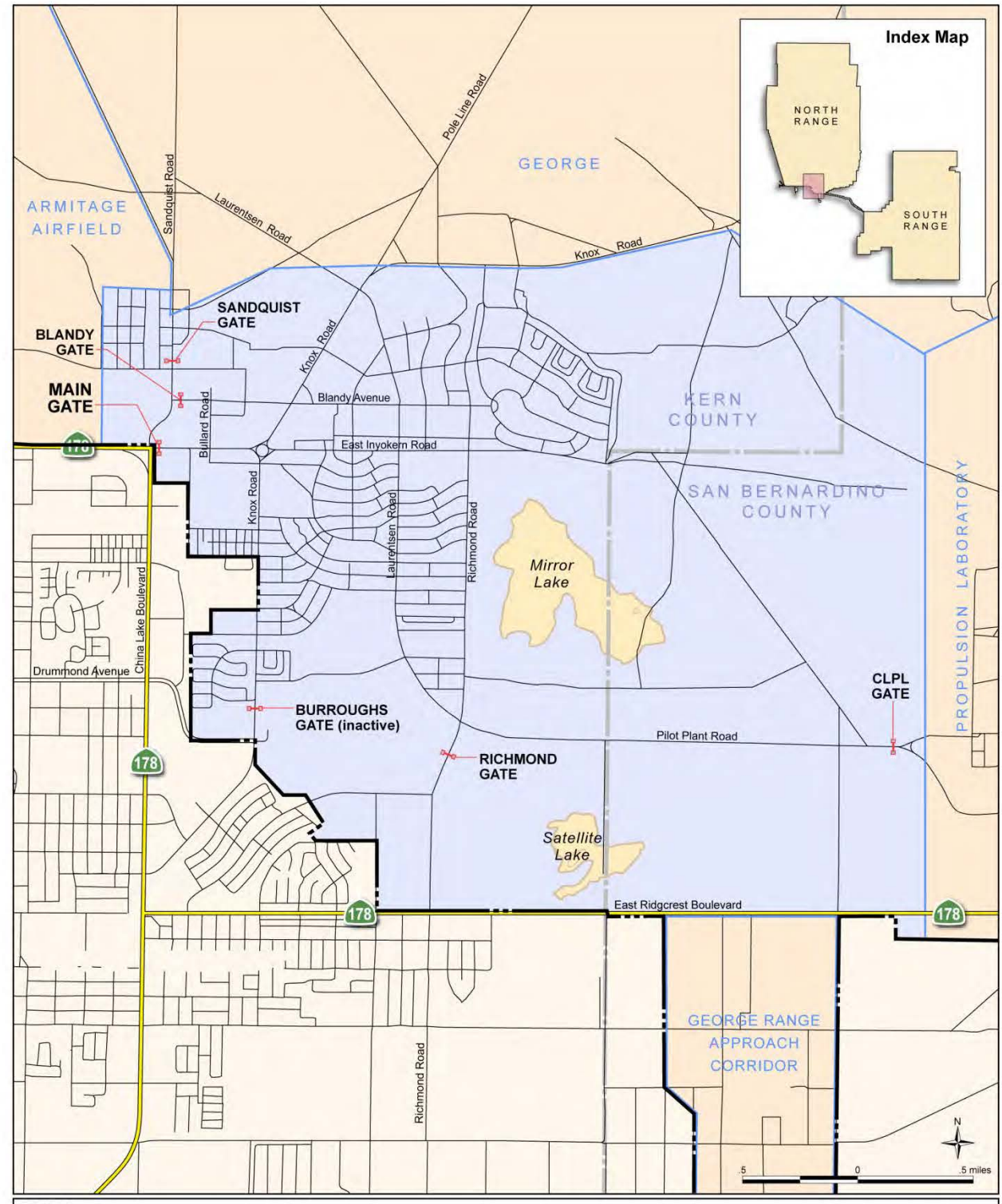
Bullard Road is a short two-lane north/south collector roadway that runs from Bowen Avenue to Blandy Avenue. The posted speed limit is 25 mph (40 kph). This road is used as a cut-through route for entering/exiting vehicles using the surface parking lots near the Michelson Laboratory.

3.12.3.12 North Richmond Road

North Richmond Road is a two-lane collector roadway that runs in a north/south direction. Access to NAWSCL is controlled at the Richmond Gate, just north of Ridgecrest Boulevard. South of East Inyokern Road, the posted speed limit is 25 mph (40 kph), and north of East Inyokern Road, the speed limit increases to 30 mph (48 kph). South of the gate, the road continues south into Ridgecrest.

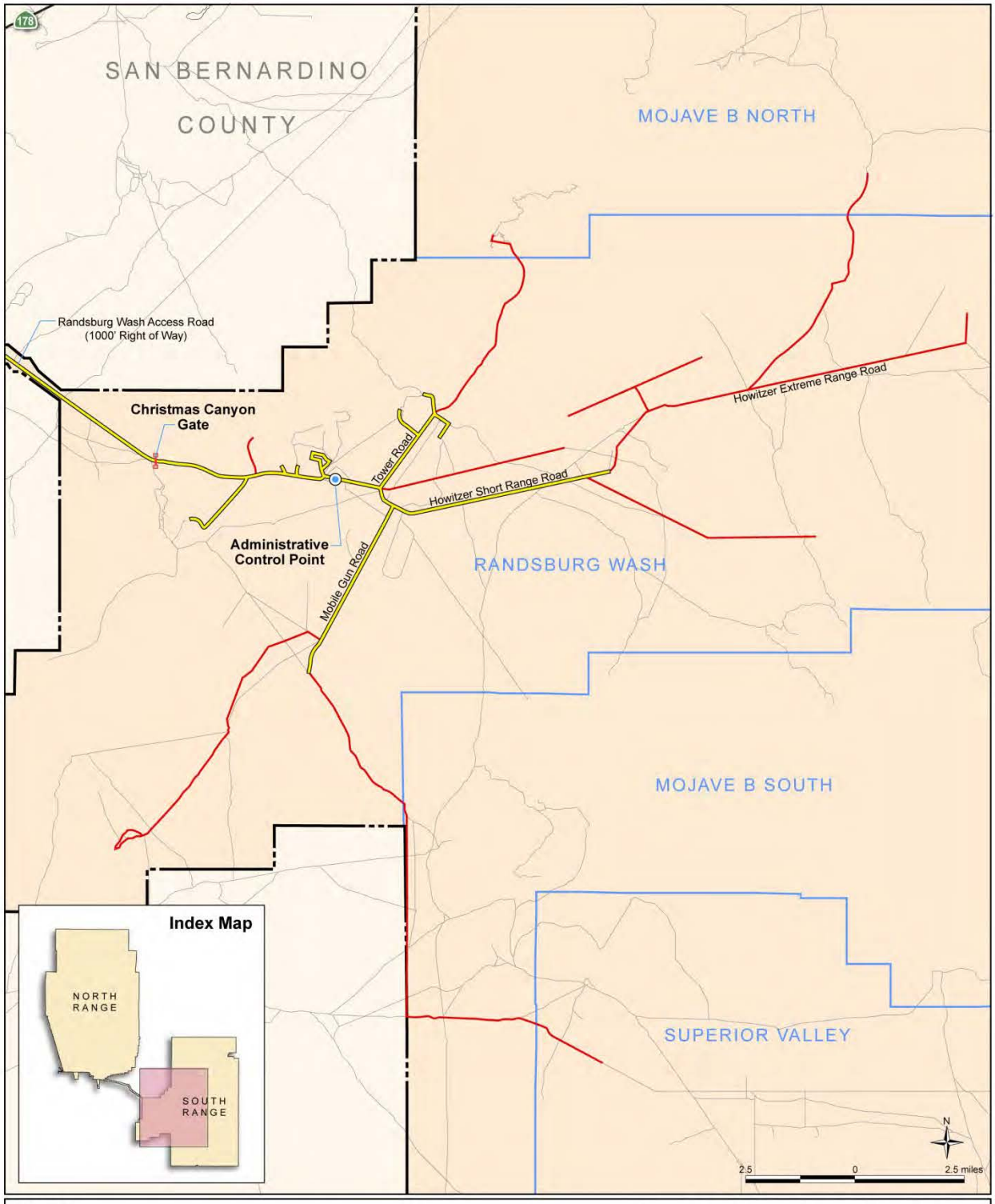
3.12.4 NAWSCL Access

Four gates (shown in Figures 3.12-2 and 3.12-3) provide entry to the NAWSCL major work areas: Main Gate, Richmond Gate, Sandquist Gate, and Lauritsen Gate. The Main Gate is on SR 178 (Inyokern Road) and provides access for traffic arriving on Inyokern Road and China Lake Boulevard. Sandquist



Key Local Roads on Mainsite Portion of North Range

Figure 3.12-2



Key Local Roads on Central and Western Portion of South Range

Figure 3.12-3

Gate, north of the Main Gate, provides access to Armitage Airfield and the North Range, and Richmond Gate provides access to the southern portion of Mainsite. In general, more traffic passes through the Main Gate than through either of the other two gates. In addition to these gates, three higher security control access points exist in the Mainsite area that control access to the ranges.

The main roadway network on NAWSCL is at Mainsite on the North Range (Figure 3.12-2). The major north and south traffic corridors are Knox Road and Richmond Road; the major east and west corridors are Inyokern Road and Blandy Avenue. Sandquist Road, North Knox Road, and North Lauritsen Road are each two-lane roads connecting Mainsite with Armitage Airfield and the rest of the North Range. Sandquist Road provides Armitage Airfield access from the Main Gate area, and Lauritsen Road provides access from the Laboratory Area. Knox Road provides access to the ranges from the Main Gate area. Little Petroglyph Canyon, Bircham Springs, Coso Village, and Big Petroglyph Canyon are accessible from the Lauritsen Gate via Knox Road to G-2 Tower Road, which merges with Mountain Springs Canyon Road, a paved route through the Darwin Wash area.

Randsburg Wash Access Road is a 25-mile-long (40-kilometer) paved road connecting the North Range with the South Range (Figure 3.12-3); it is the most frequently used road on the South Range. The two-lane restricted access road is maintained and controlled by the DoN. The road enters the South Range at Christmas Canyon Gate and continues east to the ECR administration offices and on to the Gun Line area. Howitzer Short Range Road and Howitzer Extreme Range Road allow improved access farther east from the Gun Line area. A dirt road that branches south off of Howitzer Short Range Road provides access to Superior Valley Range. The rest of the roads on the South Range are unimproved dirt roads.

3.12.5 Existing Roadway Operating Conditions

Traffic volumes for each regionally significant roadway segment were obtained from the latest (2009) Caltrans Traffic and Vehicle Data Systems Annual Average Daily Traffic (AADT) database (Caltrans 2009). Traffic volumes for roadway segments located within NAWSCL were obtained from the *Realignment and Development of a Naval Integrated Weapons and Armaments Research, Development, and Acquisition, Test and Evaluation Center at Naval Air Weapons Station China Lake Traffic Study* (U.S. Navy 2006a). Although the traffic volumes within NAWSCL are from October 2006, no appreciable growth has occurred on the Installation since then. As such, the 2006 data would be representative of current conditions.

Operating conditions typically are expressed as level of service (LOS), which is developed by comparing roadway capacity to traffic volumes. LOS is a qualitative measure that represents the collective factors of speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs of a highway facility under a particular volume condition. LOS ranges from LOS “A” to LOS “F,” with LOS A being best and LOS F being worst (Table 3.12-1).

Table 3.12-2 shows traffic volumes of key roads on NAWSCL and their associated LOS designations. The Kern County COG Congestion Management Plan identifies category E (high-density traffic with very long traffic delays) as the minimum acceptable level for regional road segments in Kern County (i.e., U.S. 395, SH 14, and SR 178). Traffic volumes within NAWSCL are generally free flowing, and congestion typically does not occur. The segments within NAWSCL are expected to operate at LOS C or better.

Table 3.12-1
Levels of Service

LOS A (Volume is 0–60% of capacity)	Free flow: no approach phase is fully used by traffic and no vehicle waits longer than one red indication. Insignificant delays.
LOS B (Volume is 61–70% of capacity)	Stable operation: an occasional approach phase is fully used. Many drivers begin to feel somewhat restricted within platoons of vehicles. Minimal delays.
LOS C (Volume is 71–80% of capacity)	Stable operation: major approach phase may become fully used and most drivers feel somewhat restricted. Acceptable delays.
LOS D (Volume is 81–90% of capacity)	Approaching unstable: drivers may have to wait through more than one red signal cycle. Queues develop but dissipate without excessive delays.
LOS E (Volume is 91–100% of capacity)	Unstable operation: volumes at or near capacity. Vehicles may wait through several signal cycles and there are long queues from upstream intersections. Significant delays.
LOS F (Volume is over 100% of capacity)	Forced flow: represents jammed conditions. Intersection operates below capacity, with several delays that may block upstream signals.

Source: Institute of Transportation Engineers 2009.

3.12.6 Intersection Operating Conditions

Key intersections located within NAWSCL are as follows:

- Sandquist Road/Lauritsen Road;
- Lauritsen Road/Nimitz Road;
- Knox Road/Blandy Avenue;
- North Richmond Road/Blandy Avenue;
- Bullard Road/East Inyokern Road;
- Knox Road/East Inyokern Road;
- Lauritsen Road/East Inyokern Road; and
- North Richmond Road/East Inyokern Road.

Existing traffic volumes and corresponding intersection LOS for each significant NAWSCL intersection were obtained from the Realignment and Development of a Naval Integrated Weapons and Armaments Research, Development, and Acquisition, Test and Evaluation Center at Naval Air Weapons Station China Lake Traffic Study (U.S. Navy 2006a). It should be noted that the key intersections are unsignalized, operating as two-way stop-controlled, all-way stop-controlled, or roundabout configurations.

The peak-hour intersection turning movements at key intersections were counted in October 2006 by Field Data Services (which represents the latest count data available). The AM peak period was defined as the time period between 6:00 a.m. and 8:00 a.m.; the midday peak period was defined as the time period between 11:00 a.m. and 1:00 p.m.; the PM peak period was defined as the time period between 4:00 p.m. and 6:00 p.m.

Table 3.12-2
Existing Traffic Volumes and LOS on Key Roads

Segment	Lanes	Average Daily Traffic (ADT)[2]	Capacity[1]	Volume-to-Capacity Ratio	Level of Service
U.S. Highway 395					
Sand Canyon Road to SH 14	4	5,650	31,200	0.18	A
SH 14 to SR 178 East	2	2,750	14,900	0.18	A
SR 178 to South China Lake Blvd	2	2,900	14,900	0.19	A
South China Lake Blvd to Searles	2	4,100	14,900	0.28	A
Installation Road					
State Highway 14					
U.S. 395 to SR 178 West	2–4	3,100	23,050	0.13	A
SR 178 East to SR 178 West	2	5,400	14,900	0.36	A
State Route 178					
SH 14 North to SH 14 South	2	2,900	14,900	0.19	A
U.S. 395 to China Lake Blvd	4	7,500	31,200	0.24	A
China Lake Blvd to Ridgecrest Blvd	4	21,400	31,200	0.69	B
Ridgecrest Blvd to Kern/San	2–4	7,300	23,050	0.32	A
Bernardino County Boundary					
China Lake Blvd					
Ridgecrest Blvd to Upjohn Avenue	4	21,400	31,200	0.69	B
Upjohn Avenue to Bowman Road	4	14,390	31,200	0.46	A
Bowman Road to Norma Street	2–4	7,300	23,050	0.32	A
Norma Street to Downs Street	2	4,094	14,900	0.27	A
Downs Street to U.S. 395	2	2,968	14,900	0.20	A
Lauritsen Road					
Talon Road to Sandquist Road	2	1,898	10,000	0.19	A
Security Gate to Blandy Avenue	2	2,198	10,000	0.22	A
Blandy Ave to East Inyokern Road	2	1,814	10,000	0.18	A
Blandy Avenue					
Bullard Road to Knox Road	2	1,135	10,000	0.11	A
Knox Road to Lauritsen Road	2	2,793	10,000	0.28	A
Lauritsen Road to N Richmond Rd	2	2,992	10,000	0.30	A
East Inyokern Road					
Main Gate to Bullard Road	4	10,033	30,000	0.33	A
Bullard Road to Knox Road	4	8,462	30,000	0.28	A
Knox Road to Lauritsen Road	2	2,259	10,000	0.23	A
Lauritsen Road to N Richmond Rd	2	1,674	10,000	0.17	A
Sandquist Road					
Security Gate to Blandy Avenue	2	4,594	10,000	0.46	A
Bullard Road					
Blandy Avenue to E Inyokern Road	2	987	10,000	0.10	A
Knox Road					
Nimitz Road to Blandy Avenue	2	2,550	10,000	0.26	A
Blandy Ave to East Inyokern Road	2	4,669	10,000	0.48	B
North Richmond Road					
Blandy Ave to East Inyokern Road	2	3,767	10,000	0.38	A
Just north of Richmond Gate	2	3,680	10,000	0.37	A

Notes:
[1] LOS E as defined by Caltrans Generalized Daily LOS Volume Tables. Capacity values for regional segments are based on LOS E criteria. All segments within NAWSCL are subject to LOS C criteria.
[2] Average Daily Traffic (ADT) volumes for U.S. 395, SH 14, SR 178, and China Lake Boulevard were obtained from Caltrans Traffic and Vehicle Data Systems Annual ADT database. ADT volumes for roadways located within NAWSCL obtained from U.S. Navy 2006a.

The 2000 Highway Capacity Manual methodology was used to determine existing LOS for the study area intersections located within NAWSCL. LOS for unsignalized intersections is determined by the computed or measured control delay and is defined for each movement. Table 3.12-3 describes the LOS criteria for unsignalized intersections as described in the 2000 Highway Capacity Manual. For intersections operating as two-way stop-controlled, the worst movement delay is reported. For all others, the average delay is used.

Table 3.12-3
Unsignalized Intersection Levels of Service

LOS	Average Control Delay (vehicles per second)[1]	Description
A	≤10.0	Operations with very low delay and most vehicles do not stop.
B	<10.0 and <15.0	Operations with good progression but with some restricted movement.
C	>15.0 and <25.0	Operations where a significant number of vehicles are stopping, with some backup and light congestion.
D	>25.0 and <35.0	Operations where congestion is noticeable, longer delays occur, and many vehicles stop. The proportion of vehicles not stopping declines.
E	>35.0 and <50.0	Operations where there is significant delay, extensive queuing, and poor progression.
F	>50.0	Operations that are unacceptable to most drivers, when the arrival rates exceed the capacity of the intersection.

Source: Transportation Research Board 2009 Highway Capacity Manual; Chapter 17, Page 2, Exhibit 17-2.

As a result of the relatively low existing traffic volumes, study intersections currently operate at LOS C or better. These findings are consistent with other rural communities located throughout the region. It should be noted that the adjacent city of Ridgecrest also defines LOS C as the upper limit of acceptable LOS at intersections.

Table 3.12-4 displays the results of the existing LOS analysis for key intersections. As shown in the table, all intersections operate at LOS C or better during peak periods, with the exception of the following intersections:

- East Inyokern Road and Bullard Road (LOS E in the AM peak hour)
- Lauritsen Road and Sandquist Road (LOS D in the AM peak hour).

3.12.7 Transit and Rail Systems

No transit or rail service is provided within NAWSCL.

Table 3.12-4
Existing Intersection Levels of Service

	Intersection (Control)	Existing Conditions		
		Peak Hour	Delay[1]	LOS[2]
1	Sandquist Road/Lauritsen Road (TWSC)	AM	26.0	D
		MD	14.7	B
		PM	15.9	C
2	Nimitz Road/Lauritsen Road (TWSC)	AM	11.7	B
		MD	10.5	B
		PM	12.2	B
3	Knox Road/Blandy Avenue (AWSC)	AM	10.1	B
		MD	8.9	A
		PM	9.5	A
4	Blandy Avenue/Lauritsen Road (AWSC)	AM	8.5	A
		MD	8.8	A
		PM	9.4	A
5	Blandy Avenue/North Richmond Road (AWSC)	AM	8.3	A
		MD	8.2	A
		PM	8.1	A
6	East Inyokern Road/Bullard Road (TWSC)	AM	35.6	E
		MD	19.8	C
		PM	17.9	C
7	East Inyokern Road/Knox Road (Roundabout)	AM	4.1	A
		MD	4.4	A
		PM	4.2	A
8	East Inyokern Road/Lauritsen Road (AWSC)	AM	7.9	A
		MD	7.8	A
		PM	8.1	A
9	East Inyokern Road/North Richmond Road (AWSC)	AM	8.4	A
		MD	8.6	A
		PM	9.5	A

Bold values indicate intersections operating at unacceptable LOS D, E, or F.
Notes:
[1] Delays refer to the average control delay for the entire intersection, measured in seconds per vehicle. At two-way stop-controlled intersections, delay refers to the worst movement.
[2] LOS calculations based on 2000 Highway Capacity Manual methodology and performed using Synchro 6.0.
AWSC = all-way stop-controlled intersection
TWSC = two-way stop-controlled intersection
MD = midday

Source: U.S. Navy 2006a.

This page intentionally left blank.

CHAPTER 4.0
ENVIRONMENTAL CONSEQUENCES

This chapter describes the potential environmental consequences associated with implementing the Proposed Action and Baseline Alternative/Updated No Action Alternative (as described in Chapter 2). (As discussed above at Section 2.3.3, discussion of environmental impacts associated with the original No Action Alternative has been omitted from here in Chapter 4, due to the public land withdrawal from NAWSCL having been reauthorized with the President's signing of the FY 2014 NDAA into law on December 26, 2013.) The CEQ regulations for implementing NEPA state that the environmental consequences discussion shall address both direct and indirect effects and their significance (40 CFR § 1502.16). Direct effects are caused by the action and occur at the same time and place (40 CFR § 1508.8). Indirect effects are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable (40 CFR § 1508.8). This chapter provides an analysis of potential direct and indirect environmental impacts (and associated mitigation measures) resulting from implementation of the Proposed Action and alternatives, as well as potential cumulative impacts from other projects (see Section 2.3.4) occurring in the region.

Consistent with the discussion of the affected environment (Chapter 3), this chapter has been divided into 12 resource sections to provide a comparative framework for evaluating the impacts of the alternatives on individual resources. For each resource area examined in this EIS/LEIS, factors considered in assessing the potential for significant impacts are described. Potential environmental effects are identified as significant, less than significant, or having no impact. As needed, mitigation measures are proposed to either eliminate impacts or reduce their severity (to include potentially reducing adverse impacts to less-than-significant levels). Mitigation measures (40 CFR § 1508.20) are defined in the CEQ regulations.

Mitigation measures that are clearly required by law or standard industry practices are generally considered to be part of the Proposed Action and alternatives. Additional potential impact avoidance and minimization measures beyond those clearly required by law or standard practices are described for each resource area as needed.

An approach to analysis is provided and describes the factors used to assess the potential for significant impacts. Each resource section then identifies the potential impacts that could be expected from implementation of the Proposed Action, the Baseline Alternative/Updated No Action Alternative, and the No Action Alternative.

This page intentionally left blank.

4.1 LAND USE

This section identifies potential land use impacts that may result from implementation of the Proposed Action and alternatives. The analysis specifically evaluates those activities that have the potential to affect land use on public and private lands adjacent to NAWSCL.

4.1.1 Approach to Analysis

Factors considered in assessing significance of a land use related impact include the extent or degree to which implementation of an alternative would cause substantial change to a currently approved or planned land use. For this analysis, impacts were evaluated by assessing the compatibility of a proposed land use with the existing land use described in Section 3.1 of this EIS/LEIS. A land use incompatibility would arise when a proposed use would preclude or adversely affect an existing or intended use of an area. A land use compatibility analysis was conducted on-installation to identify established land use patterns, characterize sensitive environmental receptors, and identify potential incompatibilities of existing uses. The analysis confirmed that established land uses were compatible with on-installation environmental resources and identified areas where additional environmental resource information was needed. The compatibility of NAWSCL activities with off-installation land use is addressed in the 2011 AICUZ Update (U.S. Navy 2011f), which includes findings from the November 2008 and August 2009 noise studies regarding changes to aircraft events. Potential effects related to noise are addressed in more detail in Section 4.2, Noise, of this chapter.

4.1.2 Proposed Action (Alternative 1)

The Proposed Action includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013); revision and implementation of the CLUMP; and accommodation of an increase in RDAT&E and training activities of up to 25 percent, expansion of unmanned aerial and surface systems, and expansion of existing and introduction of evolving DE weapons development. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised and implemented to manage land use and environmental resources.

4.1.2.1 Impacts

Land Withdrawal

The public land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. As a legislative action, the public land withdrawal renewal, in itself, would not have any direct or indirect impacts on established on- or off-installation land uses. No off-installation land use impacts are anticipated from renewal of the public land withdrawal; the discussion of potential land use impacts focuses on on-installation effects. The analysis for potential land use impacts at NAWSCL is presented in the subsections below.

Military Uses

Proposed changes to military RDAT&E and training activities under the Proposed Action would occur within existing approved range footprints and include increases in the type and tempo of ongoing military RDAT&E, training, and support activities. Increases in military activities would include additional range flight events (both subsonic and supersonic events), airfield flight events, and range ground activities (target and test site use and GTT). Military activities would also include expansion of unmanned aerial and surface systems and expansion of existing and introduction of evolving DE weapons development. Details regarding proposed military uses under this alternative are outlined in Table 2-2 in Chapter 2 of this EIS/LEIS. The land withdrawal renewal allows the DoN to continue defense-related RDAT&E and other land uses at NAWSCL. Any minor land use changes (as outlined in the following subsections) that

would result from a decision to accommodate an increase in military RDAT&E and training event would be incorporated into the CLUMP as needed. Therefore, no significant impacts to land use would be anticipated.

Range Flight Events. Military testing and training flight events are conducted on the NAWSCL ranges. Test events typically involve aircraft that are stationed at NAWSCL. Training events typically involve aircraft that are located at other installations, such as Naval Air Station Lemoore, but fly to and from NAWSCL to conduct training activities. While these flight events are generally conducted over NAWSCL boundaries, they traverse public and private lands in their approach and departure from range areas. Overflights of private land include residential, commercial, and industrial development areas. Overflights of public lands include BLM wilderness and open space areas. Subsonic flight events for test and training would increase up to an average of 28 flight hours per week and 10 supersonic events per month. While the actual number of overflights would vary according to the type and purpose of the test or training operation, the frequency of overflights would generally be expected to increase by up to 25 percent over existing conditions. Overflights of off-installation public and private lands would continue to typically be short-duration events.

UAS flight events would be increased from current conditions. Group 1 UAS flights would increase from approximately 16 flight hours to up to approximately 156 hours annually, Group 2 UAS flights would increase from approximately 42 hours to up to approximately 1,600 hours annually, Group 3 UAS flights would increase from approximately 29 hours to up to approximately 3,000 hours annually, and Group 4 UAS flights would increase from approximately 1,500 hours to up to approximately 4,000 hours annually (for an explanation of the different UAS groups, see Appendix B, Table 2). There could be up to 8,756 annual UAS flight hours under the Proposed Action. However, UAS flights would be conducted over Installation property and would not involve transit flights over wilderness areas or private land.

The increase in range flight events would not change existing land uses. Further, as discussed in Section 4.1.2, land use patterns would be expected to be the same in the foreseeable future. Therefore, potential impacts to established or future projected land uses resulting from an increase in range flight events would not be significant under the Proposed Action. Noise and overpressure associated with overflights, as well as compatibility of noise levels with existing and proposed land use, is addressed in Section 4.2, Noise.

Airfield Flight Events. Under the Proposed Action, airfield flight activities would primarily be associated with RDAT&E and some training flights. These airfield activities would continue to support aircraft flight events and would result in overflights of public and private lands in the area, particularly over Ridgecrest. The increased tempo of airfield events would result in an increase of up to 25 percent over current conditions. Approximately 4,553 additional flights would occur, for up to 22,763 annual flight events. These overflights would continue to be a routine occurrence in this area, and the nature and pattern of the flights would remain consistent with the Installation's 2011 AICUZ Update and the City of Ridgecrest's General Plan. Although the tempo of overflights would increase, overflights would typically be of short duration (generally lasting 5 to 10 seconds at any point along the aircraft's flight path). Flight events from Armitage Airfield either use NAWSCL ranges or continue on to other locations within the R-2508 complex or other ranges and airfields.

The increase in airfield flight events would not change established land uses off-installation and, as noted in Section 4.1.2, land use patterns are expected to be the same in the foreseeable future. The recommendations presented in the 2011 AICUZ Update (see Section 3.2) that were developed in partnership with the stakeholder agencies participating in the 2011 AICUZ Update Working Group would be maintained to ensure future land development compatibility with NAWSCL mission activities. Off-installation noise effects from aircraft flight events would continue to exceed noise compatibility thresholds

at certain noise-sensitive receptors; therefore, land use impacts under the Proposed Action would remain significant.

Range Ground Events.

Target and Test Site Use. In response to increases in range flight events described above, the tempo of established target and test site use would increase by up to 25 percent. The number of sorties is anticipated to increase by up to 2,458 to as many as 12,287 sorties annually. The proposed increase in use of target and test sites would occur on NAWSCL ranges in areas established for such uses, and the effects of these activities would remain within Installation boundaries. Target and test sites would be used for the same basic purposes as used previously (e.g., air-to-ground munitions test and training). In conjunction with increases in range flight events described above, the tempo and amount of inert and HE munitions use would also increase by up to 25 percent at approved target and test sites throughout the North and South Ranges. Since the proposed use would not change approved or planned land use, and the effects of these target and test site activities would remain within Installation boundaries, proposed RDAT&E and training increases would have no significant impacts on established land uses in the region.

Energetic Tests. Energetic tests would increase by up to 25 percent over current activities, resulting in approximately 727 annual energetic test events under the Proposed Action. Since the proposed use is consistent with designated land uses at NAWSCL, would not change approved or planned land use, and the effects of these energetic test activities would remain within Installation boundaries, the Proposed Action would have no significant impacts on established land use in the region.

CIED Tests. CIED test events are anticipated to increase by up to 25 percent to approximately 2,094 events annually under the Proposed Action. CIED tests would be conducted within established target and test areas, roadways and road shoulders, and established instrumentation sites. Since the proposed use is consistent with designated land uses at NAWSCL, would not change approved or planned land use, and the effects of these CIED test events would remain within Installation boundaries, the Proposed Action would have no significant impacts on established land use in the region.

Test Tracks. Test track activities would be expanded from current levels. Test track activities at the SNORT would increase up to approximately 30 events annually and test track activities at the G-4 Track would increase up to approximately 7 events annually. There would be up to approximately 37 annual test track events under the Proposed Action. Since the proposed use is consistent with designated land uses at NAWSCL, would not change approved or planned land use, and the effects of these activities would remain within Installation boundaries, the Proposed Action would have no significant impacts on established land use in the region.

Unmanned Ground Systems. UGS activities would be expanded from current conditions. Group 1 UGS events would increase up to approximately 1,144 hours annually, Group 2 UGS events would increase up to approximately 728 hours annually, and Group 3 UGS events would increase up to approximately 312 hours annually. There would be up to approximately 2,184 annual UGS test hours under the Proposed Action (Table 2-2). UGS activities would continue to use existing approved test or target sites, roadways or road shoulders, or established instrumentation sites. Since the proposed use is consistent with designated land uses at NAWSCL, would not change approved or planned land use, and the effects of these activities would remain within Installation boundaries, the Proposed Action would have no significant impacts on established land use in the region.

EOD Training. EOD training would be expanded from current conditions. EOD training events at the Darwin Wash Range are anticipated to increase by up to 25 percent to approximately 38 classes annually, in response to the expected mission tempo increases occurring throughout the Installation; however, no change in the land use footprint is currently proposed. Since the proposed use is consistent

with designated land uses at NAWSCL, would not change approved or planned land use, and the effects of these activities would remain within Installation boundaries, the Proposed Action would have no significant impacts on established land use in the region.

Ground Troop Training. Under the Proposed Action, current GTT activities would continue and there would be an increase in training events, with an emphasis on Special Forces, EOD, expeditionary force, construction battalion (Seabees), forward deployed air controller, and reconnaissance. Since the proposed use is consistent with designated land uses at NAWSCL, would not change approved or planned land use, and the effects of these activities would remain within Installation boundaries, the Proposed Action would have no significant impacts on established land use in the region.

Directed Energy Events. The tempo of DE activities would increase. HEL activities would increase by up to 65 days to approximately 115 test days annually; HPM activities would also increase by up to 65 days to approximately 115 test days annually. There would be approximately up to 230 annual DE test days under the Proposed Action. Since DE activities would occur within the North and South Ranges within established test and target areas, are consistent with designated land uses at NAWSCL, and would not change approved or planned land use, the Proposed Action would have no significant impacts on established land use in the region.

Munitions Expenditures. Due to increased RDAT&E and training events on NAWSCL, munitions expenditures would be anticipated to increase by up to 25 percent over current activities (see Table 2-2). Since the proposed use is consistent with designated land uses at NAWSCL, would not change approved or planned land use, and the effects of these activities would remain within Installation boundaries, the Proposed Action would have no significant impacts on established land use in the region.

Energetic Material Expenditures. Due to increased RDAT&E and training events on NAWSCL, energetic material expenditures would be anticipated to increase by up to 25 percent over current activities (see Table 2-2). Since the proposed use is consistent with designated land uses at NAWSCL, would not change approved or planned land use, and the effects of these activities would remain within Installation boundaries, the Proposed Action would have no significant impacts on established land use in the region.

Nonmilitary Uses

Under the Proposed Action, existing Native American, research and education, and recreational activities would continue at NAWSCL. Proposed nonmilitary uses falling into these general categories would continue to be considered on a case-by-case basis.

Native American Use. Native American access to NAWSCL-administered lands for tribal religious and traditional purposes would continue to be permitted under the terms of the existing MOA between the Tribes and the DoN. Requests for access to other locations on NAWSCL would continue to be considered on a case-by-case basis. Continued use of NAWSCL lands by Native Americans would be considered a beneficial land use since these activities are accommodated without disruption to military RDAT&E and other activities and provide a public service. Therefore, no significant impacts would occur from continued Native American uses.

Research and Education. Research and educational activities would continue to be hosted on a case-by-case basis. Since research and educational uses are considered beneficial to the Installation's environmental resources management efforts, and pre-briefing of safety, security, and environmental considerations would continue, ongoing research and education would be considered a beneficial land use. Therefore, no significant impacts would occur from continued research and education activities.

Recreation. Established recreational uses (e.g., camping, golf and gym access, hiking, equestrian use, ORV use, petroglyph tours, bird watching, and photography) would continue to be accommodated either on a case-by-case basis or according to established agreements and procedures. Recreational activities are hosted in areas designated for such use and, therefore, continuation of such activities would have no significant impacts on current land use.

CLUMP Implementation

Under the Proposed Action, NAWSCL would revise and implement the CLUMP. Implementation of the CLUMP would provide the long-term strategic management framework to accommodate the ongoing and evolving military mission, conserve and protect environmental resources, and facilitate the land use management process at NAWSCL. Because the CLUMP defines existing land use patterns and provides a unified database to support planning and decision-making, it would serve to facilitate and enhance land use management practices and processes. The CLUMP would provide NAWSCL with a "living" land management plan that would be updated, as needed, to provide information and guidance to support military readiness and maintain environmental compliance for activities conducted at NAWSCL. Since implementation of the CLUMP would incorporate land use compatibility criteria into NAWSCL planning processes, beneficial impacts on land use at NAWSCL would be expected (since potential conflicts between military activities and sensitive land uses could be avoided through proactive land use planning).

Cumulative Impacts

Under the Proposed Action, there would be no significant cumulative impacts to land use at NAWSCL. The accommodation of evolving mission needs would likely result in minor changes to on-installation land use patterns over time (e.g., expanded EOD training area); the Installation's land use review and approval procedures would ensure that these minor changes would be conducted as to maintain land use compatibility. On-installation construction projects (e.g., solar energy field and new school construction) would be directed to compatible land areas and would not result in significant impacts. Land uses under this alternative would be compatible with other projects in the region (e.g., Deep Rose Geothermal Exploratory Project, Haiwee Geothermal Leasing, Digital 395 Project, and proposed zeolite mine) as the proposed projects are distant from NAWSCL and do not effect on-installation or regional land uses. However, a fiberoptic line will be installed on NAWSCL that connects Michelson Lab and on-installation schools to the Digital 395 system. The EA prepared for this "branch" to the Digital 395 main line indicated that no significant impacts would result from this installation as the line would follow existing disturbed corridors on NAWSCL (Chambers Group 2011).

The proposed Ridgecrest Solar Power Project would alter the land use patterns of portions of Kern County. Land would be converted from undeveloped desert to a renewable energy facility (Solar Millennium 2009). None of the cumulative projects would involve aircraft events and therefore they would not have aircraft noise with incompatible land uses. This alternative also would be compatible with the City of Ridgecrest General Plan and other local infrastructure activities (e.g., continuation of geothermal operations at Coso KGRA and the proposed Ridgecrest Solar Power Project). The location of the geothermal operations at Coso KGRA and the proposed solar energy development near Ridgecrest are distant from the NAWSCL cantonment and do not effect on-installation land uses. Therefore, implementation of the other projects in combination with the Proposed Action would not have significant cumulative impacts to land use.

Access to withdrawn lands for recreational purposes is prohibited for reasons of safety and national security. The impact analysis in Section 4.1 accounts for the past and present cumulative effects of the land withdrawal renewal. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not have a cumulative impact as it relates to recreation resources from other military land withdrawal actions. Demand for non-urban recreation opportunities is expected to continue to impact

regional recreational resources; however, BLM land management plans have assessed recreation resources on public lands surrounding NAWSCL. Because these plans continue to address recreation resources managed for the area, cumulative impacts as a result of the Proposed Action are not expected to lands administered by BLM.

4.1.2.2 Mitigation Measures and Impact Avoidance and Minimization Measures

Mitigation Measures

No mitigation measures are proposed.

Impact Avoidance and Minimization Measures

Because significant impacts on land use compatibility resulting from noise associated with existing airfield aircraft events would continue under the Proposed Action, compliance with the land use management recommendations of the 2011 AICUZ Update would be applicable to the Proposed Action.

Summary of Impacts

In keeping with history, use of these lands for military purposes is a continuation of this same pattern of military land use. Consequently, the renewed withdrawal of public land for a term of 25 years is consistent with established land uses on and surrounding NAWSCL. Also, since the land withdrawal is a renewal of a previously approved land withdrawal, it in itself does not have any direct or indirect impact on the established land uses of NAWSCL.

The increase in range flight events would not change existing land uses on- and off-installation. Land use patterns would be expected to be the same in the foreseeable future. Impacts to established or future projected land uses resulting from an increase in range flight events would not be significant under the Proposed Action.

The existing aircraft noise resulting from ongoing aircraft flight events at Armitage Field is a significant land use compatibility impact around NAWSCL as described in Chapter 3.2. Off-installation noise effects from aircraft flight events under the Proposed Action would continue to exceed noise compatibility thresholds at certain noise-sensitive receptors in the communities of China Lake Acres and Ridgecrest. Therefore, land use impacts under the Proposed Action would remain significant.

The proposed increase in use of target and test sites would occur on NAWSCL ranges in areas established for such uses, and the effects of these activities would remain within Installation boundaries. Since the proposed use would not change approved or planned land use, and the effects of these target and test site activities would remain within Installation boundaries, proposed RDAT&E and training increases would have no significant impacts on established land uses in the region.

Proposed nonmilitary uses falling into these general categories would continue to be considered on a case-by-case basis. These uses would continue in previously designated areas and would not result in significant land use impacts.

The CLUMP would incorporate land use compatibility criteria into NAWSCL planning processes, beneficial impacts on land use at NAWSCL would be expected (since potential conflicts between military activities and sensitive land uses could be avoided through proactive land use planning).

Land uses under this alternative would be compatible with other regional federal planning efforts for the Mojave Region being conducted by BLM and others for conservation of natural resources. Because none

of the other cumulative projects involve aircraft events, no additional aircraft noise incompatible land uses would occur. The Proposed Action would be compatible with local infrastructure activities. Therefore, no significant cumulative land use impacts would occur.

Overall, off-installation noise effects from aircraft flight events under the Proposed Action would continue to exceed noise compatibility thresholds at certain noise-sensitive receptors, and therefore, the overall land use impacts under the Proposed Action would remain significant (Table 4.1-1).

Table 4.1-1
Proposed Action (Alternative 1) - Summary of Land Use Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures.
Military Uses	
Existing aircraft noise from Armitage Airfield results in significant land use compatibility impacts around NAWSCL at certain noise –sensitive receptors.	*Mitigation Measures* No mitigation measures. *Impact Avoidance and Minimization Measures* Compliance with the land use management recommendations of the 2011 AICUZ Update.
Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Overall Summary	
Significant impact.	No mitigation measures. Impact avoidance and minimization measures addressed above.

4.1.3 Baseline Alternative/Updated No Action Alternative (Alternative 2)

The Baseline Alternative/Updated No Action Alternative includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013) with continuation of military activities at current levels. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised, as appropriate, and implemented to manage land use and environmental resources at NAWSCL, in accordance with the Installation mission.

4.1.3.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. As a legislative action, the public land withdrawal renewal, in itself, would not have any direct or indirect impacts on established on- or off-installation land uses. No off-installation land use impacts are anticipated from renewal of the public land withdrawal. The analysis for potential on-installation land use impacts is presented in the subsections below.

Military Uses

Military RDAT&E and training events under the Baseline Alternative/Updated No Action Alternative would continue under current conditions and within areas currently designated for such uses. Military RDAT&E, training, and support activities would be conducted at current levels. No increase or change in type of activities would be anticipated or authorized without analysis of environmental impacts per NEPA. No overall increase in tempo would be authorized, and no changes in tempo would be anticipated apart from ongoing fluctuation in the number of particular activities conducted based on customers' evolving requirements, consistent with historical practice. There would be no expansion of unmanned aerial and surface systems or DE weapons systems. Additional information regarding existing levels of military use is outlined in Table 2-2 in Chapter 2 of this EIS/LEIS. Therefore, impacts on land use related to military uses would not be significant.

Range Flight Events. Military testing and training flight events are conducted on the NAWSCL ranges. Test events typically involve aircraft that are stationed at NAWSCL. Training events typically involve aircraft that are located at other installations, such as Naval Air Station Lemoore, but fly to and from NAWSCL to conduct training activities. While these flight events are generally conducted over NAWSCL boundaries, they traverse public and private lands in their approach and departure from range areas. Overflights of private land include residential, commercial, and industrial development areas. Overflights of public lands include BLM wilderness and open space areas.

Under the Baseline Alternative/Updated No Action Alternative, subsonic flight events for RDAT&E and training would continue at current levels, which is approximately 5,750 flight hours per year. Supersonic aircraft events at NAWSCL would continue at current levels, at approximately 100 supersonic events per year. The number of UAS flights would continue at current levels. Range flight events would continue to result in overflights of public and private lands adjacent to the Installation's boundary and beyond the ROI in the approach and departure corridors of the R-2508 airspace. These overflights would continue to be of typically short duration and would not change existing land uses. Further, as discussed in Section 4.1.2, land use patterns are expected to be the same in the foreseeable future. Therefore, continued range flight events would have no significant impacts on established or future projected land use. Noise and overpressure associated with overflights, as well as compatibility of noise levels with existing and proposed land use, is addressed in Section 4.2, Noise.

Airfield Flight Events. Airfield flight events for RDAT&E and training would continue at current levels with a continuation of military operations at NAWSCL Armitage Airfield at current levels, and other existing ground-based support facilities would continue to support flight operations. Approximately 18,210 annual flight events from Armitage Airfield would continue to occur. Flight events from Armitage Airfield either use the NAWSCL ranges or continue on to other locations within the R-2508 complex or other ranges and airfields. Airfield events create overflights of public and private lands in the area, particularly over Ridgecrest. Overflights are typically short in duration and do not adversely affect established land uses on public or private lands. These overflights are consistent with the Installation's 2011 AICUZ Update and the City of Ridgecrest's General Plan, and would not change existing land uses. Further, as discussed in Section 4.1.2, land use patterns are expected to be the same in the foreseeable future.

Therefore, airfield flight events would continue to have significant impacts on established or future projected land use. The compatibility of noise levels with existing and proposed land uses is addressed in Section 4.2, Noise.

Range Ground Events

Target and Test Site Use. Approximately 9,829 aircraft flights (sorties) would continue to be conducted at NAWSCL annually. Use of existing authorized target and test sites on the North and South Ranges would continue. Since continued use of munitions at these existing target and test sites is consistent with established land use designations, ongoing target and test site use would have no significant impacts on land use in the region.

Energetic Tests. The tempo of energetic test activities would continue at current levels, with approximately 581 annual energetic test events under the Baseline Alternative/Updated No Action Alternative. Energetic tests would be conducted within established target and test areas approved for these materials. Since the proposed use is consistent with designated land uses at NAWSCL, would not change approved or planned land use, and the effects of these energetic test activities would remain within Installation boundaries, ongoing activities would have no significant impacts on established land use in the region.

CIED Tests. CIED test events would continue at current levels; approximately 1,675 CIED test events would occur annually at NAWSCL. CIED tests would be conducted within established test and target areas, roadways or road shoulders, or established instrument sites. Since the proposed use is consistent with designated land uses at NAWSCL, would not change approved or planned land use, and the effects of these CIED test activities would remain within Installation boundaries, ongoing activities would have no significant impacts on established land use in the region.

Test Tracks. Test track activities would continue at current levels. Test track activities at SNORT would include approximately 15 events annually, and test track activities at G-4 Track would include approximately 3 events annually. There would be approximately 18 annual test track events under the Baseline Alternative/Updated No Action Alternative. Since the proposed use is consistent with designated land uses at NAWSCL, would not change approved or planned land use, and the effects of these activities would remain within Installation boundaries, ongoing activities would have no significant impacts on established land use in the region.

Unmanned Ground Systems. UGS activities would continue at current levels, with approximately 694 annual UGS test hours under the Baseline Alternative/Updated No Action Alternative. Since the proposed use is consistent with designated land uses at NAWSCL, would not change approved or planned land use, and the effects of these UGS activities would remain within Installation boundaries, ongoing activities would have no significant impacts on established land use in the region.

EOD Training. EOD training would continue at current levels, with approximately 30 EOD training classes at Darwin Wash occurring annually under the Baseline Alternative/Updated No Action Alternative. Since the proposed use is consistent with designated land uses at NAWSCL, would not change approved or planned land use, and the effects of these training activities would remain within Installation boundaries, ongoing activities would have no significant impacts on established land use in the region.

Ground Troop Training. The tempo of mission-compatible GTT activities and Seabee training would continue at current levels. GTT would remain within existing footprints on both ranges, and users would continue to receive established safety and environmental briefings before conducting training activities. Since this type of use is consistent with established land use, and the effects of GTT activities are confined to NAWSCL boundaries, ongoing GTT would have no significant impacts on current land use.

Directed Energy Events. The tempo of DE activities would continue at current levels, with approximately 100 annual test days under the Baseline Alternative/Updated No Action Alternative. Since the proposed use is consistent with designated land uses at NAWSCL, would not change approved or planned land use, and the effects of these activities would remain within Installation boundaries, ongoing activities would have no significant impacts on established land use in the region.

Munitions Expenditures. Munitions expenditures would continue at current levels. Since the proposed use is consistent with designated land uses at NAWSCL, would not change approved or planned land use, and the effects of these activities would remain within Installation boundaries, ongoing activities would have no significant impacts on established land use in the region.

Energetic Material Expenditures. Energetic material expenditures would continue at current levels on the North Range and South Range. Since the proposed use is consistent with designated land uses at NAWSCL, would not change approved or planned land use, and the effects of these activities would remain within Installation boundaries, ongoing activities would have no significant impacts on established land use in the region.

Nonmilitary Uses

Under the Baseline Alternative/Updated No Action Alternative, existing Native American, research and education, and recreational activities would continue at NAWSCL. Proposed nonmilitary uses falling into these general categories would continue to be considered on a case-by-case basis.

Native American Use. Native American access to NAWSCL-administered lands would continue to be permitted under the terms of the existing MOA between the DoN and Native American tribes. Accordingly, access to the Coso Hot Springs and Prayer Site would continue to be permitted. Access to the area is granted under the terms of the MOA for tribal religious and traditional purposes. Requests for access to other locations on NAWSCL would continue to be considered on a case-by-case basis. Continued use of NAWSCL lands by Native Americans would be considered a beneficial land use. Therefore, no significant impacts would occur from continued Native American uses significant.

Research and Education. Research and educational activities would continue to be hosted on a case-by-case basis. Since research and educational uses are considered beneficial to the Installation's environmental resources management efforts, and pre-briefing of safety, security, and environmental considerations would continue, ongoing research and education would be considered a beneficial land use. Therefore, no significant impacts would occur from continued research and education activities.

Recreation. Established recreational uses (camping, golf and gym access, hiking, equestrian use, ORV use, petroglyph tours, bird watching, and photography) would continue to be accommodated either on a case-by-case basis or according to established agreements and procedures. Recreational activities are hosted in areas designated for such use and, therefore, continuation of such activities would have no significant impacts on current land use.

CLUMP Implementation

Since NAWSCL is required by law to have a plan for the management of land areas withdrawn under the CDPA, the Baseline Alternative/Updated No Action Alternative includes revision and implementation of the CLUMP, reflecting any changes in land use projected for accommodating current military RDAT&E and training activities. Management decisions and land management practices may be revised to address any such changes in land use management and environmental review processes. As described under the Proposed Action, the CLUMP formalizes and streamlines land management practices, ensures operational readiness by facilitating ongoing and evolving test and training events, protects public health and safety, protects cultural resources, and conserves and protects natural resources.

Implementation of the CLUMP would serve to facilitate and enhance land use management practices and processes at NAWSCL and, thus, would result in beneficial impacts on land use at NAWSCL.

Cumulative Impacts

Cumulative impacts anticipated under the Baseline Alternative/Updated No Action Alternative would be similar to the likely cumulative impacts associated with the Proposed Action, only to a somewhat lesser extent or intensity, insofar as NAWSCL's cumulative impacts would be expected to be somewhat lower under the Baseline Alternative/Updated No Action Alternative because this alternative would not include the potential increase in RDAT&E and training activities.

Similar to the Proposed Action, there would be no significant cumulative impacts to land use at NAWSCL under the Baseline Alternative/Updated No Action Alternative. On-installation construction projects (e.g., solar energy field and new school construction) would occur within compatible land areas and would not result in cumulatively significant impacts. Existing activities would continue essentially at current levels, with no changes in tempo anticipated apart from ongoing fluctuation in the number of particular activities conducted based on customers' evolving requirements, consistent with historical practice. Land uses under this alternative would be compatible with other projects in the region (e.g., Deep Rose Geothermal Exploratory Project, Haiwee Geothermal Leasing Area, Digital 395 Project, and proposed zeolite mine) as the proposed projects are distant from NAWSCL and do not effect on-installation or regional land uses. However, a fiberoptic line will be installed on NAWSCL that connects Michelson Lab and on-installation schools to the Digital 395 system. The EA prepared for this "branch" to the Digital 395 main line indicated that no significant impacts would result from this installation as the line would follow existing disturbed corridors on NAWSCL (Chambers Group 2011).

The proposed Ridgecrest Solar Power Project would alter the land use patterns of portions of Kern County. Land would be converted from undeveloped desert to a renewable energy facility (Solar Millennium 2009). None of the cumulative projects would involve aircraft events and therefore they would not have aircraft noise with incompatible land uses. This alternative would also be compatible with the City of Ridgecrest General Plan and other local infrastructure activities (e.g., continuation of geothermal operations at Coso KGRA and the proposed Ridgecrest Solar Power Project). The location of the geothermal operations at Coso KGRA and the proposed solar energy development near Ridgecrest are distant from the NAWSCL cantonment and do not effect on-installation or regional land uses. Therefore, implementation of the other projects in combination with the Baseline Alternative/Updated No Action Alternative would not have significant cumulative impacts to land use.

Access to withdrawn lands for recreational purposes is prohibited for reasons of safety and national security. The impact analysis in Section 4.1 accounts for the past and present cumulative effects of the land withdrawal renewal. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not have a cumulative impact as it relates to recreation resources from other military land withdrawal actions. Demand for non-urban recreation opportunities is expected to continue to impact regional recreational resources; however, BLM land management plans have assessed recreation resources on public lands surrounding NAWSCL. Because these plans continue to address recreation resources managed for the area, cumulative impacts as a result of the Baseline Alternative/Updated No Action Alternative are not expected to lands administered by BLM.

4.1.3.2 Mitigation Measures and Impact Avoidance and Minimization Measures

Mitigation measures and impact avoidance and minimization measures would be the same as those for the Proposed Action (see Section 4.1.2.2).

Summary of Impacts

Since the land withdrawal is a renewal of a previously approved land withdrawal, it in itself would not have any direct or indirect impact on the established land uses of NAWSCL.

Range flight events would not change existing land uses. Land use patterns would be expected to be the same in the foreseeable future. Impacts to established or future projected land uses resulting from continued range flight events would not be significant under the Proposed Action.

The existing aircraft noise resulting from ongoing aircraft flight events at Armitage Field is a significant land use compatibility impact around NAWSCL as described in Chapter 3.2. Off-installation noise effects from ongoing aircraft flight events would continue to exceed noise compatibility thresholds at certain noise-sensitive receptors in the communities of China Lake Acres and Ridgecrest. Therefore, land use impacts under the Baseline Alternative/Updated No Action Alternative would remain significant.

The continued use of target and test sites would occur on NAWSCL ranges in areas established for such uses, and the effects of these activities would remain within Installation boundaries. Since the ongoing use would not change approved or planned land use, and the effects of these target and test site activities would remain within Installation boundaries, proposed RDAT&E and training activities would have no significant impacts on established land uses in the region.

Proposed nonmilitary uses falling into these general categories would continue to be considered on a case-by-case basis. These uses would continue in previously designated areas and would not result in significant land use impacts.

The CLUMP would incorporate land use compatibility criteria into NAWSCL planning processes, beneficial impacts on land use at NAWSCL would be expected (since potential conflicts between military activities and sensitive land uses could be avoided through proactive land use planning).

Land uses under this alternative would be compatible with other regional federal planning efforts for the Mojave Region being conducted by BLM and others for conservation of natural resources. Because none of the other cumulative projects involve aircraft events, no aircraft noise incompatible land uses would occur. The Baseline Alternative/Updated No Action Alternative would be compatible with local infrastructure activities. Therefore, no significant cumulative land use impacts would occur.

Overall, off-installation noise effects from aircraft flight events under the Baseline Alternative/Updated No Action Alternative would continue to exceed noise compatibility thresholds at certain noise-sensitive receptors and would continue to be a significant land use impact (Table 4.1-2).

4.1.4 No Action Alternative (Alternative 3)

Because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of “no action” conditions at NAWSCL; therefore, the discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed (please see discussion in Section 2.3.3). For the purposes of the Final EIS/LEIS, the Baseline Alternative/Updated No Action Alternative is considered to effectively represent “no action” conditions or status quo (see Section 4.1.3).

Table 4.1-2
Baseline Alternative/Updated No Action Alternative (Alternative 2) - Summary of Land Use Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses	
Existing aircraft noise from Armitage Airfield results in significant land use compatibility impacts around NAWSCL at certain noise –sensitive receptors.	*Mitigation Measures* No mitigation measures. *Impact Avoidance and Minimization Measures* Compliance with the land use management recommendations of the 2011 AICUZ Update.
Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Overall Summary	
Significant impact.	No mitigation measures. Impact avoidance and minimization measures addressed above.

This page intentionally left blank.

4.2 NOISE

This section identifies potential noise impacts that may result from implementation of the Proposed Action and alternatives.

Noise is analyzed in this EIS/LEIS for the following proposed tempo increase components, which would produce intermittent increases in noise in the vicinity of NAWSCL:

- Noise produced by airfield aircraft landings and takeoffs;
- Noise produced by special-use air space aircraft events as part of weapons RDAT&E programs conducted at NAWSCL land ranges; and
- Noise produced by various activities associated with weapons evaluation and testing at land ranges within NAWSCL, including
- small arms and large-caliber weapons testing and firing, and
- explosives detonation.

Noise from training vehicles typically is noticeable only within each land range and would not result in any concerns to off-installation land uses. Therefore, vehicle-related noise is not considered further in this EIS/LEIS.

4.2.1 Approach to Analysis

NAWSCL has conducted several aircraft noise studies to update noise conditions around the airfield due to changes in aircraft events at NAWSCL. These studies include a November 2008 noise study and an August 2009 noise study, both depicting noise contours around the airfield. A combined noise study report was completed in April 2010 and was further used as the basis for the 2011 AICUZ Update, approved and published in April 2011. This recently updated 2011 AICUZ was used to predict future aircraft noise contours around Armitage Airfield based on anticipated aircraft events changes compared to the existing/baseline condition.

Noise modeling performed for the updated 2011 AICUZ was used to establish noise exposure contours for noise generating activities that could be expected from implementing relevant elements of each of the alternatives. This analysis was conducted in accordance with DoN policy and guidelines contained in the AICUZ Program Procedure and Guideline (OPNAVINST 11010.36C) and DoD guidelines implementing the AICUZ noise program (DoD Directive 4165.57). The DoD AICUZ program identifies compatible noise level thresholds for various types of activities, which are encouraged for use by local planning agencies to promote compatible land use management in areas influenced by military airfield events.

DoD program noise compatibility guidelines were used in this analysis to determine whether the aircraft flight events at Armitage Airfield of a given alternative would have a significant noise exposure effect on established off-installation activities. The DoD land use planning guideline establishes three noise zones:

- Noise Zone I (64 CNEL and below) is essentially an area of low or no impact.
- Noise Zone II (CNEL 65 to 74) is an area with impact where some land use controls are needed.
- Noise Zone III (CNEL 75 and above) is the most severely impacted area and requires the greatest degree of compatible use controls.

Using the same approach as for existing conditions, the EIS/LEIS uses Noise Zone II thresholds as an indicator of potential significant noise impact when certain compatible land use controls and mitigations are recommended within this zone particularly for new sensitive receptors.

Noise exposure levels for airfield and range flight events are presented using the CNEL metric expressed in dB. The CNEL sound level is the energy-averaged sound level measured over a 24-hour period. The resulting CNEL contours present a graphic representation of accumulated noise resulting from military airfield activities. CNEL contours presented in this analysis incorporate an additional noise weighting penalty for airfield activities conducted during evening and nighttime hours.

In addition to the noise exposure analyzed in terms of CNEL metric corresponding to the DoD land use compatibility guidelines, aircraft flight event noise and supersonic flight-generated airborne vibration expressed in terms of SEL and psf, respectively, are also discussed through a qualitative comparison with existing/baseline conditions.

The noise exposure resulting from the use of munitions for air- and ground-based activities on the ranges, and range ground activities were modeled using the DoD BNOIE2 large caliber weapon noise model for each alternative. Noise exposure levels for munitions expenditures are presented using the CDNL metric expressed in dB following the Navy-RAICUZ procedures (OPNAVINST 3550.1).

Other on-installation noise generating activities such as commuter traffic and infrastructure maintenance and operations were also considered but not analyzed further because these activities were determined to have a minimal effect on the overall noise exposure contours for the Installation.

Potential changes in noise levels associated with each of the alternatives were compared to established land use criteria to evaluate the significance of any projected change. Noise-sensitive receptors considered in this analysis include schools, hospitals, churches, family residences, sensitive environmental resources (e.g., threatened or endangered wildlife, historic properties), and wilderness areas within the ROI.

4.2.2 Proposed Action (Alternative 1)

The Proposed Action includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013); revision and implementation of the CLUMP; and accommodation of an increase in RDAT&E and training activities of up to 25 percent, expansion of unmanned aerial and surface systems, and expansion of existing and introduction of evolving DE weapons development. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised and implemented to manage land use and environmental resources.

4.2.2.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. Since the land withdrawal is a renewal of a previously approved land withdrawal resulting in the continued operation of noise generating activities at NAWSCL, it would have an impact on noise as analyzed in the Proposed Action and alternatives. The analysis for potential noise impacts is presented in the subsections below.

Military Uses

Under the Proposed Action, increases in range flight events, airfield flight events, and range ground activities are proposed. Details regarding proposed military uses under this alternative are outlined in Table 2-2 in Chapter 2.

Airfield Flight Events

The Proposed Action would anticipate an increase in future airfield events from the baseline/existing condition. Proposed airfield flight events are based on the baseline/existing conditions, with an increase by up to 25 percent in flight events, including aircraft in transient to and from NAWSCL that are based at other airfields, as well as replacement of some aircraft. These increases and replacements include the following:

- Increase of total Armitage Airfield flight events by up to 25 percent relative to the baseline/existing condition;
- The one-for-one replacement of EA-6B Prowler aircraft events by EA-18G Growler events;
- Introduction of F-35C Lightning II (i.e., Joint Strike Fighter) events comprising 20 percent of total airfield flight events and 50 percent of total Baker Range sorties; and
- Proportional reduction of F/A-18C/D Hornet and AV-8B Harrier II aircraft events due to the introduced F-35C flight events.

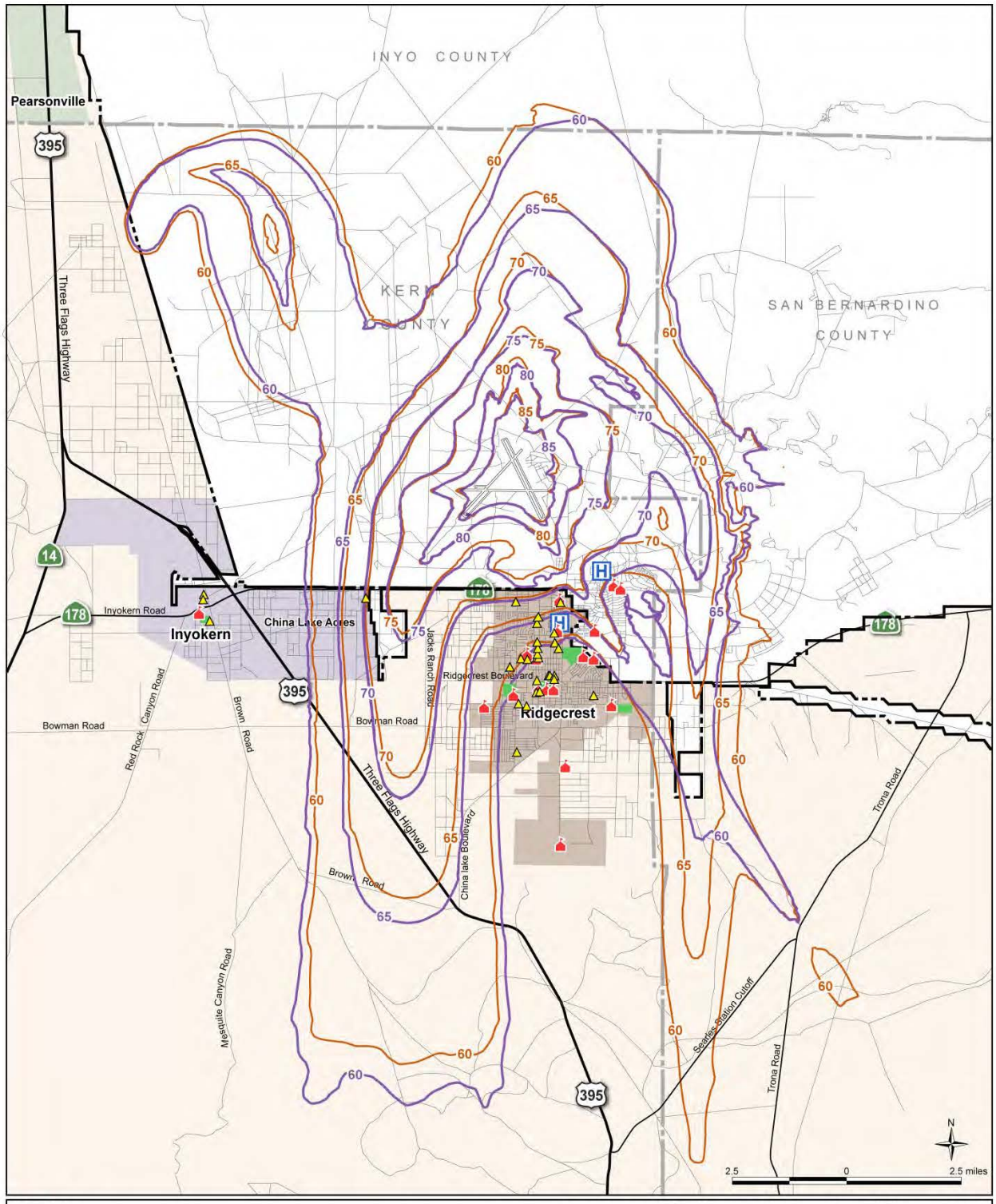
Under the Proposed Action, the F/A-18E/F Super Hornets would still be the most-prevalent aircraft, with 62 percent of total flight events. F-35Cs would be the second most prevalent aircraft, with 20 percent of total flight events.

NAWSCL's recently updated 2011 AICUZ describes the projected aircraft noise contours associated with Armitage Airfield based on the above changes compared to the existing/baseline condition. Off-installation noise effects from aircraft flight events under the Proposed Action would exceed noise compatibility thresholds at certain noise-sensitive receptors in the communities of China Lake Acres and Ridgecrest. The aircraft noise contours under the Proposed Action are shown in Figure 4.2-1.

Table 4.2-1 summarizes the land use acreage and population under each noise zone. Certain noise-sensitive receptors such as schools, hospitals, and churches within Noise Zone II were also identified as below:

- Desert Christian Center
- Family Bible Church
- Immanuel Southern Baptist Church
- Inyokern Church of Christ
- McIntyre Hospital
- Richmond Elementary School
- Immanuel Christian School.

Therefore, off-installation effects from future aircraft flight operations under the Proposed Action would exceed noise compatible zone (i.e., Noise Zone II) thresholds at these noise-sensitive receptors in the communities of China Lake Acres and Ridgecrest and associated noise impacts are considered significant.



CHINALAKEEIS/069

LEGEND

- School
- Hospital
- Park
- Church
- Installation Boundary
- Road
- County Boundary

CNEL Contour (dBA)

- Proposed Action
- Baseline Alternative/ Updated No Action Alternative

Proposed Action and Baseline Alternative/ Updated No Action Alternative Aircraft CNEL Contours at NAWSCL

Figure 4.2-1

Table 4.2-1
Area and Population under Proposed Action (Alternative 1) Noise Contours

CNEL (dBA)	Off-Installation Area (acres)	On-Installation Area (acres)	Total Area (acres)	Off-Installation Population	On-Installation Population	Total Population
60-64	21,195	27,542	48,737	7,590	970	8,560
65-69	8,417	11,824	20,241	4,665	750	5,415
70-74	3,707	9,320	13,027	1,330	280	1,610
75-79	417	6,099	6,516	0	10	10
80-84	0	2,424	2,424	0	10	10

The comparison of the 65- and 75-dBA noise contours (i.e., Noise Zone II [65 to 74 dBA CNEL]) under the existing/baseline condition and the Proposed Action condition is shown in Figure 4.2-1 and indicates the following compared to the existing/baseline condition:

- Noise contours contributed by departure operations would be slightly greater under the Proposed Action. This noise increase is primarily due to the introduction of the F-35C, which generates louder noise during takeoff, and the up to 25 percent increase in overall aircraft events.
- Noise contours contributed by arrival operations would be slightly reduced under the Proposed Action. The primary cause of the noise reduction is the elimination of EA-6B events. The EA-6B generates greater arrival noise compared to the F-35C, F/A-18 E/F Super Hornet, and EA-18G Growler.

Among sensitive receptors, the Proposed Action would result in below net increases within Noise Zone II:

- One typical sensitive receptor among schools, hospitals, and churches
- Approximately 1,000 more residents would be affected by noise.

Table 4.2-2 summarizes the net changes in the sizes of noise contour areas in each noise zone under the Proposed Action as compared to the existing condition. Overall off-installation Noise Zone II contours would be reduced while Noise Zone III contours would slightly increase. No off-installation developed areas or populations are within Noise Zone III. Off-installation noise effects would continue to exceed noise compatibility thresholds at certain noise-sensitive receptors in the communities of China Lake Acres and Ridgecrest. Given the relatively small expansion of both Noise Zones II and III contours around NAWSCL causing slight noise increase at those affected sensitive land uses along the departure tracks (approximately 1,000 additional residents would be within noise zone II), the Armitage Airfield aircraft operational noise is considered to be less than significant as compared to the baseline condition. However, because of the preexisting aircraft noise resulting in significant land use compatibility impacts around NAWSCL as described in Section 3.2, the overall aircraft noise impacts under the Proposed Action would continue to be significant. The land use management plans (i.e., 2011 AICUZ Update and CLUMP) and noise mitigation measures described in Section 3.2 would still need to be implemented.

Table 4.2-2
Change in Area from
Existing Condition Noise Contours
(acres)

CNEL (dBA)	Off-Installation	On-Installation
60-64	-1,859	29
65-69	-1,017	-345
70-74	721	-3,051
75-79	72	365
80-84	0	77

Source: Wyle 2010 and U.S. Navy 2011f.

Range Aircraft Events

Given the low levels predicted for aircraft noise around the ranges, as described in Section 3.2.4, both aircraft noise and potential airborne vibration levels from aircraft flight events within range areas would not be expected to result in significant noise concerns compared to baseline conditions. As discussed in the approach to the analysis, according to the fundamental acoustical principle, a doubling (i.e., 100 percent increase) of the number of same aircraft events would result in a net 3-dBA noise increase, which is a barely perceptible change in noise. Therefore, given the percentage increase of up to 25 percent in aircraft events, military noise levels in term of CDNL within range areas under the Proposed Action are anticipated to be slightly higher but at comparable levels summarized in Table 3.2-4, which shows less than 45 dBA within the South Range and a maximum of 56 dBA within the North Range. These levels are well below the 65-dBA land use compatibility threshold; therefore, noise impacts from range flight events are not considered to be significant.

Although the Proposed Action would result in a slight increase in the number of flight events within the range as compared to baseline conditions, each event noise as discussed in Section 3.2.4 would continue at the comparable level for similar jets under the similar power setting conditions including the F-35. It is anticipated that the flight event operational noise within the range would have similar risk of receiving complaints as compared to the existing/baseline conditions. The event noise effects would be particularly intrusive for low altitude subsonic flights during quiet nighttime hours. Low-level flights are conducted in accordance with R-2508 Joint Policy and Planning Board procedures, which stipulate avoidance of noise-sensitive areas. Range night events that depart the Airfield would be conducted on the Installation or in established and approved operating areas in the R-2508 Complex and away from residential population centers. These nighttime hour events from Armitage Airfield would be limited (less than 500 per year as identified in the 2011 AICUZ Update). Given the limited number of night-time events over a year and because low-flight missions would typically occur within the NAWSCL range boundaries, the event noise impact from range flight events is not considered to be significant.

The event noise effects of supersonic flights (along designated supersonic flight tracks) would result in short duration noise and/or startle effects. In order to minimize the startle effect to area residents, NAWSCL would continue to provide advance notice to the public of supersonic flight missions that are not typical mission operations. Given the limited number of supersonic flight events (approximately 10 per month), the event noise impact from supersonic range flight activities is not considered to be significant. The supersonic flight events would result in airborne vibration effects along the flight tracks within the

NAWSCL range boundaries. The flight tracks shown in Figure 3.2-6 are samples used for analysis; actual flight tracks could occur over approved ranges. Short duration overpressure resulting in sonic booms would have the potential to cause cosmetic damage effects similar to the existing/baseline condition given the similar mission types and event noise (i.e., air pressure) levels. Therefore the overall air pressure levels under the Proposed Action would be similar to those described in Section 3.2 and would cause minimal possibility of cosmetic damage beyond the Installation boundary and would not result in significant airborne vibration impacts.

Areas that may experience focus boom effects primarily include undeveloped areas of the NAWSCL ranges and a small segment in the northeast corner of the BLM's Golden Valley Wilderness Area. National park Service lands along the northeastern and eastern boundary of the South Range, and the western portion of the Fort Irwin National Training Center, including NASA facilities located at the Goldstone Complex, could experience sonic boom effects from NAWSCL supersonic flights. Death Valley National Park lands located at the north and eastern boundary of the South Range could also experience overpressures associated with carpet booms (see Figure 3.2-6).

Range Ground Events

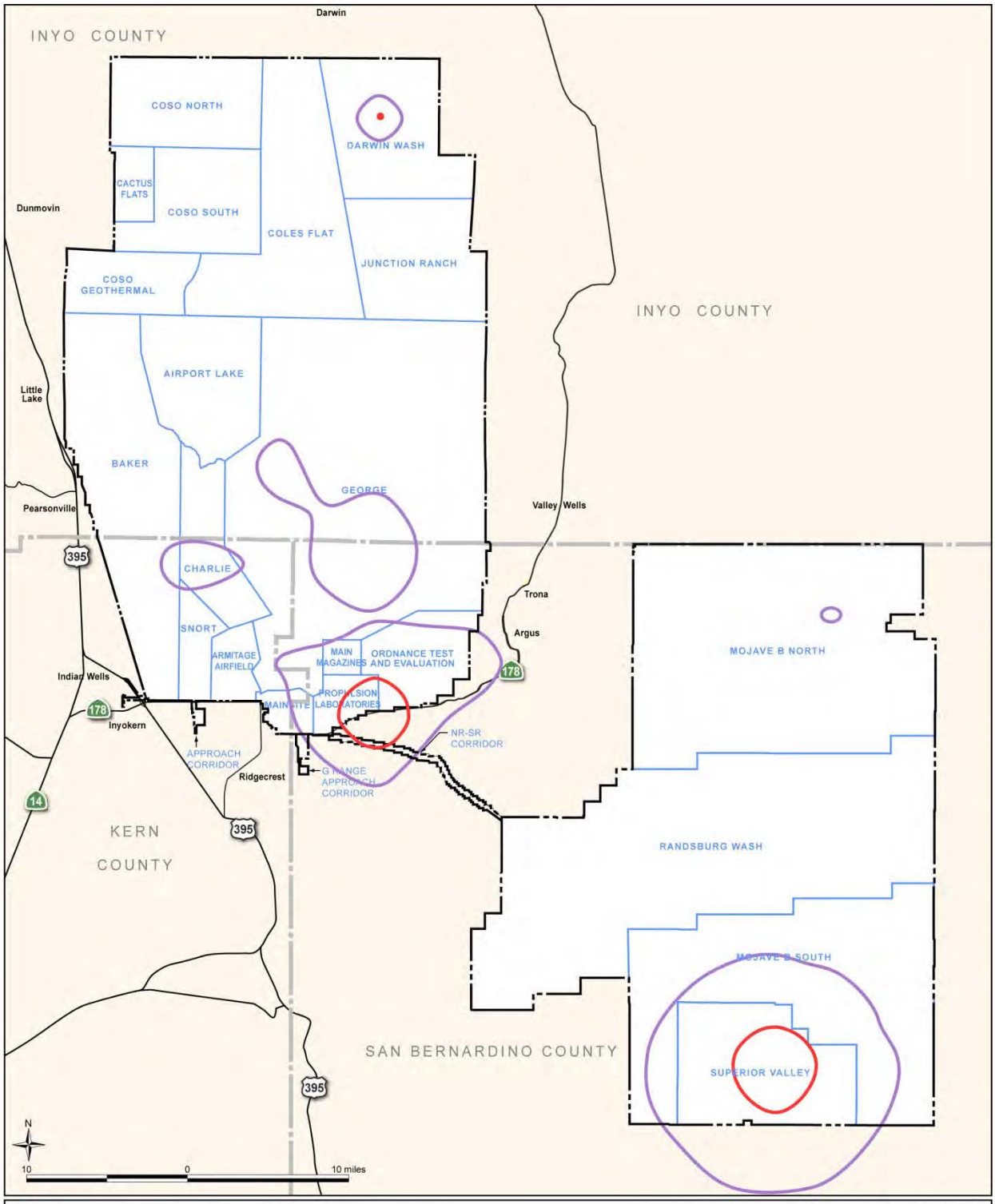
Ground-based activities occurring at NAWSCL include actions that support RDAT&E and training events, GTT activities, and facilities operations and maintenance activities. The following analysis focuses on munitions use and DE testing.

***Munitions*.** The CDNL levels under the Proposed Action were predicted using the same methodologies used for establishing existing/baseline conditions described in Section 3.2, but with expenditure data summarized in Appendix F. Munitions use would include HE, energetics, CIED, EOD, and test track activities.

Figure 4.2-2 displays the estimated CDNL contours for both large-caliber weapons firing and explosives detonation noise from proposed average range conditions, with the same firing and target configuration as shown in Figure 3.2-5. The contours would be marginally greater (the areas within Noise Zones II and III that would be affected would be slightly greater) compared to the existing baseline conditions (see Figure 3.2-4). However, the difference would be negligible. Moreover, no off-installation noise-sensitive land uses such as residences, schools, hospitals, or churches would be located within Noise Zones II or III. Therefore, no significant weapons-testing and explosive detonation noise impacts would occur under the Proposed Action.

***DE Weapons Testing*.** It is expected that event noise levels from HEL and HPM tests would increase slightly when the weapon energy level increases. Rather than using conventional explosives to propel projectiles, these new weapons emit high energy in an aimed direction without the means of a projectile, in the manner of a laser beam. These weapons are complex electrical systems that are not explosive or propellant-based systems. Based on the limited number (230 events) and typical short duration of such tests (in seconds) that would occur on an annual basis, and because these tests would occur well within the Installation boundaries, the noise contribution from HEL and/or HPM to NAWSCL-wide overall levels in terms of DNL (Figure 4.2-2) is anticipated to be minimal.

Other Activities. Noise levels from other activities, such as GTT, the Seabees Mineral Products Training Complex, and well drilling, would not substantially change from existing noise levels. GTT and facilities operations and maintenance would increase by up to 25 percent. Potential noise impacts from other activities could occur to sensitive receptors (e.g., installation housing, schools, and child care facilities); however, these activities would be temporary and of short duration; therefore, potential noise impacts from other activities would not be significant.


Darwin
INYO COUNTY
COSO NORTH
DARWIN WASH
CACTUS FLATS
COSO SOUTH
Dunmovin
COLES FLAT
JUNCTION RANCH
COSO GEOTHERMAL
INYO COUNTY
AIRPORT LAKE
Little Lake
BAKER
GEORGE
Pearsonville
Valley Wells
395
CHARLIE
Trona
SNORT
Argus
MOJAVE B NORTH
ARMITAGE AIRFIELD
MAIN MAGAZINES
ORDNANCE TEST AND EVALUATION
178
Indian Wells
PROPULSION LABORATORIES
MAIN SITE
178
Inyokern
NR-SR CORRIDOR
APPROACH CORRIDOR
Ridgecrest
G RANGE APPROACH CORRIDOR
14
KERN
COUNTY
395
RANDSBURG WASH
MOJAVE B SOUTH
SAN BERNARDINO COUNTY
SUPERIOR VALLEY
395
N
10
0
10 miles
LEGEND
Land Management Unit
Installation Boundary
CDNL Contour (dBC)
Baseline
62
70
CHINALAKEEIS/077
Proposed Action NAWSCL
Large Weapon Noise Contours
Figure 4.2-2

Nonmilitary Uses

Under the Proposed Action, existing Native American, geothermal, research and education, and recreational activities would continue at NAWSCL. Existing nonmilitary uses at NAWSCL produce a negligible amount of noise. Most activities involve a limited amount of vehicular use, but do not generate high noise levels. Therefore, nonmilitary activities would not result in significant noise impacts.

CLUMP Implementation

Implementation of the CLUMP would serve as a mechanism to implement NAWSCL's updated 2011 AICUZ. The AICUZ program characterizes airfield-related noise sources and provides compatibility guidelines for on- and off-installation land use planning activities. The CLUMP would facilitate the use of the land use compatibility criteria presented in the Installation's updated AICUZ Study to support land use planning and decision processes at NAWSCL. The DoD compatibility guidelines have been provided to local and regional planning agencies, with NAWSCL's recommendation for inclusion in their respective general and specific plans. The CLUMP's use of land use compatibility criteria in planning processes would represent a beneficial impact to noise-sensitive receptors within the Installation boundaries. Implementation of AICUZ Study recommendations by local and regional planning agencies would serve to reduce potential conflicts between military activities and noise-sensitive receptors representing a beneficial effect of CLUMP implementation.

Cumulative Impacts

Because preexisting aircraft noise from Armitage Airfield results in significant impacts around NAWSCL, construction activity within areas with elevated aircraft noise would have significant cumulative impacts while construction activities occur. On-installation construction projects (e.g., solar energy field and new school construction) would result in temporary noise impacts and occur within respective compatible AICUZ Study areas. Construction noise would only affect those areas immediately adjacent to the project and would result in noise impacts while construction activities occur. The accommodation of evolving mission needs would likely result in minor changes to on-installation noise patterns over time (e.g., expanded EOD training area); noise from these activities would likely continue to remain within the installation boundaries and is not anticipated to have an appreciable noise effect.

Projects of potential interest (see Section 2.4) from a cumulative impact perspective include the solar energy construction projects, the Digital 395 Project, and the proposed zeolite mine. The Ridgecrest Solar Power Project (approximately 5 miles southwest of NAWSCL), the Solar Energy Project occurring at NAWSCL (on the southern portion of the North Range), and the Digital 395 Project (along SR 395 adjacent to the western boundary of the North Range) would have minor noise effects associated with temporary construction activities that would not overlap with noise generated from NAWSCL mission activities and, thus, would have no long-term noise impacts. The proposed zeolite mine is expected to be in operation over a 20-year period; however, the site is remote to NAWSCL (over 40 miles northwest of the South Range) and the nearest human population is in the community of Shoshone (over 30 miles from the proposed mine). Therefore, noise generated from mining activities would not be expected to result in significant noise impacts. The continued operation of the existing geothermal plant, the Deep Rose Geothermal Exploration Project, the Haiwee Geothermal Leasing Area, and the provisions of the City of Ridgecrest General Plan have no readily identifiable noise impacts and, thus, have no potential for significant noise impacts.

Noise impacts from off-installation development projects are localized or would affect areas that are distant from NAWSCL. Consequently, such off-installation development would result in cumulative impacts to the extent such projects would overlap (temporally and spatially) with significant preexisting aircraft noise from Armitage Airfield in close proximity to NAWSCL.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Other military land withdrawals in the region occur at Fort Irwin National Training Center (adjacent to the South Range and three other installations that are 75 to 175 miles from NAWSCL. Because the Proposed Action involves a renewed withdrawal of public land that is at a considerable distance from other currently known potential land withdrawal, it would not have the potential to result in significant cumulative noise impacts in combination with other potential withdrawals.

Insofar as the Proposed Action would independently have significant noise impacts due to preexisting noise associated with Armitage Airfield flight operations, the Proposed Action would necessarily result in significant cumulative impacts in conjunction with the cumulative projects discussed herein.

4.2.2.2 Mitigation Measures and Impact Avoidance and Minimization Measures

Mitigation Measures

Because significant noise impacts on land use compatibility resulting from the existing airfield aircraft events would continue under the Proposed Action, NAWSCL would continue implementation of the aircraft noise abatement and aircrew education programs to minimize noise impacts on- and off-installation.

Impact Avoidance and Minimization Measures

Impact avoidance and minimization measures that would be implemented include *c*omplying with the land use management recommendations of the 2011 AICUZ Update; maintaining and enhancing NAWSCL community information programs and AICUZ Program outreach efforts; and continuing the NAWSCL noise complaint response program.

Impacts Summary

Since the land withdrawal is a renewal of a previously approved land withdrawal, it would not have any direct or indirect impact on noise generated at NAWSCL. NAWSCL's recently updated 2011 AICUZ predicts the future aircraft noise contours around Armitage Airfield. Noise contours contributed by departure operations would be slightly greater under the Proposed Action. This noise increase is primarily due to the introduction of the F-35C, which generates louder noise during takeoff, and the up to 25 percent increase in overall aircraft events. Noise contours contributed by arrival operations would be slightly reduced under the Proposed Action. The primary cause of the noise reduction is the elimination of EA-6B events, which generates greater arrival noise compared to the F-35C, F/A-18 E/F Super Hornet, and EA-18G Growler.

The existing aircraft noise resulting from ongoing aircraft flight events at Armitage Field is a significant land use compatibility impact around NAWSCL as described in Section 3.2. Off-installation noise effects from aircraft flight events under the Proposed Action would continue to exceed noise compatibility thresholds at certain noise-sensitive receptors in the communities of China Lake Acres and Ridgecrest. Therefore, the overall aircraft noise impacts under the Proposed Action would continue to be significant. The land use management plan and noise mitigation measures described in Section 3.2 would still need to be implemented.

Aircraft noise and potential airborne vibration levels from aircraft flight events within range areas would not be expected to result in significant noise concerns:

- Cumulative military noise levels within range areas under the Proposed Action are anticipated to be less than 45 dBA within the South Range and a maximum of 56 dBA within the North Range.

These levels are well below the 65-dBA land use compatibility threshold; therefore, noise impacts from range flight events are not considered to be significant.

- It is anticipated that the Proposed Action would have comparable risk of receiving complaints as compared to the existing/baseline conditions.

- Supersonic flight events would result in airborne vibration effects along the flight tracks. Short duration overpressure resulting in sonic booms would have potential cosmetic damage effects similar to the existing/baseline condition given the similar mission types and event noise levels. Therefore the overall air pressure levels under the Proposed Action would be similar to those currently occurring and would cause minimal possibility of cosmetic damage beyond the Installation boundary and result in no significant airborne vibration impacts.

CDNL contours for both large-caliber weapons firing and explosives detonation noise from proposed average range conditions would be marginally greater compared to current conditions. The difference would be negligible and no off-installation noise-sensitive land uses such as residences, schools, hospitals, or churches would be located within Noise Zones II or III. Therefore, no significant weapons-testing and explosive detonation noise impacts would occur under the Proposed Action.

HEL and HPM tests emit high energy in an aimed direction without the means of a projectile, in the manner of a laser beam. The HEL and HPM systems are new types of weapons that are still undergoing RDAT&E, with no sufficient noise and sound propagation data generated to date. However, given the limited number (230 events) and typical short duration of such tests (in seconds) that would occur on an annual basis, and because these tests would occur well within the Installation boundaries, the noise contribution to NAWSCL-wide overall levels in terms of DNL is anticipated to be minimal.

Potential noise impacts from other mission activities could occur to sensitive receptors; however, these activities would be temporary and of short duration; therefore, potential noise impacts from other mission activities would not be considered significant.

Nonmilitary uses at NAWSCL would continue to produce a negligible amount of noise. Therefore, nonmilitary activities would not result in significant noise impacts. The CLUMP's use of land use compatibility criteria in planning processes would represent a beneficial impact to noise-sensitive receptors within the ROI, since potential conflicts between military activities and noise-sensitive receptors would be minimized through proactive land use planning.

On-installation construction projects (e.g., solar energy field and new school construction) would occur within compatible AICUZ Study areas and only affect those areas immediately adjacent to the project and would not result in cumulatively significant impacts. Noise impacts from off-installation development projects are also localized or would affect areas that are distant from NAWSCL. Consequently, there would be no significant cumulative noise impacts from other projects in the ROI in combination with the Proposed Action.

Overall, off-installation noise effects from aircraft flight events under the Proposed Action would continue to exceed noise compatibility thresholds at certain noise-sensitive receptors; therefore, the overall aircraft noise impacts under the Proposed Action would continue to be significant (Table 4.2-3).

4.2.3 Baseline Alternative/Updated No Action Alternative (Alternative 2)

The Baseline Alternative/Updated No Action Alternative includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013), with continuation of military activities at current levels. Nonmilitary activities would continue according to current patterns of use. The 2005

Table 4.2-3
Proposed Action (Alternative 1) – Summary of Noise Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses	
Existing aircraft noise from events at Armitage Airfield is a significant noise impact and the Proposed Action would continue to exceed noise compatibility thresholds at certain noise-sensitive receptors.	*Mitigation Measures* Continue implementation of the NAWSCL air operations noise abatement and aircrew education programs to minimize noise impacts on- and off-installation. *Impact Avoidance and Minimization Measures* Compliance with the land use management recommendations of the 2011 AICUZ Update. Maintain and enhance NAWSCL community information programs and AICUZ Program outreach efforts. Continue the NAWSCL noise complaint response program.
Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
Existing aircraft noise from Armitage Airfield results in significant noise impacts around NAWSCL; construction and other activity within areas with elevated aircraft noise would result in significant cumulative noise impacts while such activities occur, with significant cumulative impacts occurring generally as a result of airfield noise events alone.	*Mitigation Measures* Continue implementation of the NAWSCL air operations noise abatement and aircrew education programs to minimize noise impacts on- and off-installation. *Impact Avoidance and Minimization Measures* Impact avoidance and minimization measures addressed above.
Overall Summary	
Significant impact.	Mitigation measures addressed above. Impact avoidance and minimization measures addressed above.

CLUMP would be revised, as appropriate, and implemented to manage land use and environmental resources at NAWSCL. Therefore, noise levels around NAWSCL would remain the same as described under the existing conditions in Section 3.2.

4.2.3.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. Since the land withdrawal is a renewal of a previously approved land withdrawal resulting in the continued operation of noise generating activities at NAWSCL, it would have an impact on noise generated at NAWSCL. The analysis for potential noise impacts is presented in the subsections below**.**

Military Uses

Under the Baseline Alternative/Updated No Action Alternative, established military RDAT&E, training and support activities, and associated military land use would continue at existing levels and within areas currently designated for such uses. Additional information regarding existing levels of military use is outlined in Table 2-2 in Chapter 2 of this EIS/LEIS. Because NAWSCL would continue to conduct the same number of annual flight events and weapons-testing activities on its ranges as are currently conducted, noise levels around NAWSCL would remain the same as described under the existing conditions in Section 3.2. Off-installation noise effects from continuing aircraft flight events under the Baseline Alternative/Updated No Action Alternative would exceed noise compatibility thresholds at certain noise-sensitive receptors in the communities of China Lake Acres and Ridgecrest. Therefore, the overall noise impact from implementing the Baseline Alternative/Updated No Action Alternative is considered to be significant. The land use management plans (i.e., 2011 AICUZ Update and CLUMP) and noise mitigation measures described in Section 3.2 would still need to be implemented to ensure future land development compatibility with NAWSCL mission activities.

Nonmilitary Uses

Under the Baseline Alternative/Updated No Action Alternative, existing Native American, geothermal, research and education, and recreational activities would continue at NAWSCL. Existing nonmilitary uses at NAWSCL produce a negligible amount of noise. Most activities involve a limited amount of vehicular use, but do not generate high noise levels. Therefore, nonmilitary activities would not result in significant noise impacts.

CLUMP Implementation

While a CLUMP would not be mandated in the absence of a continuing withdrawal of public land, it is anticipated that the CLUMP would nonetheless be retained as the land use management plan for any ongoing DoN/DoD activities that would be accommodated at NAWSCL. As described for the Proposed Action, implementation of the CLUMP would serve as a mechanism to implement NAWSCL's updated AICUZ. The CLUMP would facilitate the use of land use compatibility criteria presented in the Installation's updated AICUZ Study to support land use planning and decision processes at NAWSCL. The CLUMP's use of land use compatibility criteria in planning processes would represent a beneficial impact to noise-sensitive receptors within the Installation boundaries. Implementation of AICUZ Study recommendations by local and regional planning agencies would serve to reduce potential conflicts between military activities and noise-sensitive receptors representing a beneficial effect of CLUMP implementation.

Cumulative Impacts

Cumulative impacts anticipated under the Baseline Alternative/Updated No Action Alternative would be similar to the likely cumulative impacts associated with the Proposed Action, only to a somewhat lesser

extent or intensity, insofar as NAWSCL's cumulative impacts would be expected to be somewhat lower under the Baseline Alternative/Updated No Action Alternative because this alternative would not include the potential increase in RDAT&E and training activities.

Because preexisting aircraft noise from Armitage Airfield results in significant impacts around NAWSCL, construction activity within areas with elevated aircraft noise would result in significant cumulative impacts while construction activities occur. Noise levels from the Baseline Alternative/Updated No Action Alternative at NAWSCL would remain the same. On-installation construction projects (e.g., solar energy field and new school construction) would result in temporary noise impacts and occur within respective compatible AICUZ Study areas. Construction noise would only affect those areas immediately adjacent to the project and would result in noise impacts while construction activities occur. The accommodation of the expanded EOD training area would likely result in minor changes to on-installation noise patterns; however, noise from these activities would likely continue to remain within the Installation boundaries and is not anticipated to have appreciable noise effects.

Projects of potential interest from a cumulative impact perspective include the solar energy construction projects, the Digital 395 Project, and the proposed zeolite mine. The Ridgecrest Solar Power Project (approximately 5 miles southwest of NAWSCL), the Solar Energy Project occurring at NAWSCL (on the southern portion of the North Range), and the Digital 395 Project (along SR 395 adjacent to the western boundary of the North Range) would have minor noise effects associated with temporary construction activities and, thus, would have no long-term impacts. The proposed zeolite mine is expected to be in operation over a 20-year period, however, the site is remote to NAWSCL (over 40 miles northwest of the South Range) and the nearest human population is in the community of Shoshone (over 30 miles from the proposed mine). Therefore, noise generated from mining activities would not be expected to result in significant noise impacts. The continued operation of the existing geothermal plant, the Deep Rose Geothermal Exploration Project, the Haiwee Geothermal Leasing Area, and the provisions of the City of Ridgecrest General Plan have no readily identifiable noise impacts and, thus, have no potential for significant noise impacts.

Noise impacts from off-installation development projects are localized or would affect areas that are distant from NAWSCL. Consequently, no significant cumulative noise impacts from those projects in combination with the Baseline Alternative/Updated No Action Alternative are anticipated. However, because preexisting aircraft noise from Armitage Airfield results in significant land use compatibility impacts around NAWSCL, construction activity within areas with elevated aircraft noise would have cumulative impacts while construction activities occur.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Other military land withdrawals in the region occur at Fort Irwin National Training Center (adjacent to the South Range and three other installations that are 75 to 175 miles from NAWSCL. Because the Baseline Alternative/Updated No Action Alternative involves a renewed withdrawal of public land that is at a considerable distance from other currently known potential land withdrawal, it would not have the potential to result in significant cumulative noise impacts in combination with other potential withdrawals.

4.2.3.2 Mitigation Measures and Impact Avoidance and Minimization Measures

Mitigation measures and impact avoidance and minimization measures proposed would be the same as those for the Proposed Action (Section 4.2.2.2).

Summary of Impacts

Since the land withdrawal is a renewal of a previously approved land withdrawal, it would not have any direct or indirect impact on noise generated at NAWSCL.

The existing aircraft noise resulting from ongoing aircraft flight events at Armitage Field is a significant land use compatibility impact around NAWSCL as described in Section 3.2. Off-installation noise effects from continuing aircraft flight events under the Baseline Alternative/Updated No Action Alternative would exceed noise compatibility thresholds at certain noise-sensitive receptors in the communities of China Lake Acres and Ridgecrest. Therefore, the airfield aircraft noise impact from implementing the Baseline Alternative/Updated No Action Alternative is considered to be significant.

Noise effects for low altitude flights during nighttime hours and/or supersonic flights are particularly intrusive. Subsonic nighttime hour events from Armitage Airfield would continue to be limited (less than 400 per year as modeled in the 2011 AICUZ Update) and are not considered to be significant. Supersonic flight events would continue to result in airborne vibration effects along the flight tracks. Therefore, the overall air pressure levels under the Baseline Alternative/Updated No Action Alternative would cause minimal possibility of cosmetic damage beyond the Installation boundary and would not result in significant airborne vibration impacts.

Nonmilitary uses at NAWSCL would continue to produce a negligible amount of noise and would not result in significant noise impacts. The CLUMP's use of land use compatibility criteria in planning processes would represent a beneficial impact to noise-sensitive receptors within the ROI, since potential conflicts between military activities and noise-sensitive receptors would be minimized through proactive land use planning.

Potential noise impacts from other mission activities could occur to sensitive receptors; however, these activities would be temporary and of short duration; therefore, potential noise impacts from other mission activities would not be considered significant.

Nonmilitary uses at NAWSCL would continue to produce a negligible amount of noise. Therefore, nonmilitary activities would not result in significant noise impacts. The CLUMP's use of land use compatibility criteria in planning processes would represent a beneficial impact to noise-sensitive receptors within the ROI, since potential conflicts between military activities and noise-sensitive receptors would be minimized through proactive land use planning.

On-installation construction projects would occur within compatible AICUZ Study areas and only affect those areas immediately adjacent to the project and would not result in cumulatively significant impacts. Noise impacts from off-installation development projects are also localized or would affect areas that are distant from NAWSCL. Consequently, there would be no significant cumulative noise impacts from other projects in the ROI in combination with the Baseline Alternative/Updated No Action Alternative.

Overall, off-installation noise effects from aircraft flight events under the Baseline Alternative/Updated No Action Alternative would continue to exceed noise compatibility thresholds at certain noise-sensitive receptors and would continue to be a significant noise impact (Table 4.2-4).

4.2.4 No Action Alternative (Alternative 3)

Because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of "no action" conditions at NAWSCL; therefore, the discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed (please see discussion in Section 2.3.3). For the purposes of the Final EIS/LEIS, the Baseline Alternative/Updated No Action Alternative is considered to effectively represent "no action" conditions or status quo (see Section 4.2.3).

Table 4.2-4
Baseline Alternative/Updated No Action Alternative (Alternative 2) – Summary of Noise Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses	
Existing aircraft noise from events at Armitage Field would continue to exceed noise compatibility thresholds at certain noise-sensitive receptors and would be a significant noise impact.	*Mitigation Measures* Continue implementation of the NAWSCL air operations noise abatement and aircrew education programs to minimize noise impacts on- and off-installation. *Impact Avoidance and Minimization Measures*. Compliance with the land use management recommendations of the 2011 AICUZ Update. Maintain and enhance NAWSCL community information programs and AICUZ Program outreach efforts. Continue the NAWSCL noise complaint response program.
Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
Existing aircraft noise from Armitage Airfield results in significant noise impacts around NAWSCL; construction and other activity within areas with elevated aircraft noise would result in significant cumulative noise impacts while such activities occur, with significant cumulative impacts occurring generally as a result of airfield noise events alone.	*Mitigation Measures* Continue implementation of the NAWSCL air operations noise abatement and aircrew education programs to minimize noise impacts on- and off-installation. *Impact Avoidance and Minimization Measures* Impact avoidance and minimization measures addressed above.
Overall Summary	
Significant impact.	Mitigation measures addressed above. Impact avoidance and minimization measures addressed above.

4.3 AIR QUALITY

This section identifies potential air quality impacts that may result from implementation of the Proposed Action and alternatives.

For the purposes of assessing air quality effects under NEPA, emissions were estimated for all activities involving the use of aircraft, GTT and weapon testing related vehicles, ground equipment, and munitions at or below 3,000 feet (914 meters). The NEPA analysis includes a CAA General Conformity Analysis to make an applicability determination pursuant to the General Conformity Rule (40 CFR § 93[B]) by focusing on activities that could potentially impact nonattainment or maintenance areas within the ROI. As previously noted in Section 3.3, NAWSCL lies within three air districts: the Eastern Kern County APCD, the Mojave Desert AQMD, and the Great Basin Unified APCD, which each have a different attainment status and different State Implementation Plan (SIP) requirements. The General Conformity Applicability Analysis and detailed air emissions analysis are presented in Appendix G.

4.3.1 Approach to Emissions Analysis

The data for the air quality analysis are based, wherever possible, on parametric information from the Installation and NAWCWD records and data files. One major source of NAWCWD data is the NAVAIR Range Complex Management Plan (RCMP) (U.S. Navy 2011a), which is supplemented by additional range data and interviews with specialists on military operations. These data were used to estimate numbers and types of aircraft and munitions that would be involved in each alternative.

Under the Proposed Action, the existing emissions levels (see Table 3.3-5) for each source category are assumed to increase by up to 25 percent to reflect the proposed tempo increase. The only exception is for the aircraft events at Armitage Airfield since the aircraft mix would be different. Therefore the prediction of aircraft emissions at Armitage Airfield considered the change in aircraft mix defined in *Air Installations Compatible Use Zones Study Naval Air Weapons Station China Lake (NAVFACENGCOM, April 2011).* Appendix G provides a detailed discussion of the analysis approach. In analyzing potential impacts to air quality under the Proposed Action, this section of the EIS/LEIS will focus on the increase in emissions expected as a result of the proposed increase in RDAT&E and training tempo, for the reasons set forth below.

With the signing of the FY 2014 NDAA in December 2013, the DoN's use of withdrawn lands at NAWSCL (approximately 92 percent of the total Installation property) has been reautherized. Accordingly, in determining the sum total of emissions associated with the Proposed Action, as a conceptual matter, the Proposed Action could be said to encompass both the emissions generated by activities conducted under existing/baseline conditions (or that portion of such emissions associated with activities conducted on or over withdrawn lands), as well as any increase in emissions expected to be generated in conjunction with the potential increases in RDAT&E and training under the Proposed Action. Table 4.3-1 (below) provides information on emissions for criteria pollutants and GHGs broken down by Existing/Baseline Totals; Incremental Totals (indicating the potential increases in emissions under the Proposed Action); and Totals (indicating the projected overall emissions if the Proposed Action were to be implemented). For example, per Table 4.3-1, total emissions for CO under the Proposed Action could therefore be characterized as 1,214.7 tons per year, based on an existing/baseline of 1,069.0 tons/year plus an incremental total of 145.7 tons/year. (The actual total would be somewhat less, since the data in the table do not distinguish between withdrawn lands and leased or fee-owned lands not subject to withdrawal, and therefore errs to some extent in favor of overestimating emissions associated with withdrawn lands.)

Table 4.3-1
Annual Air Emissions for the Proposed Action (Alternative 1)

Emission Source Category	Annual Emissions (Tons per Year)						
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	CO_2[e]
Range Flight Events							
Airfield Flight Events and Aircraft Maintenance[a]	346.8	159.9	1,164.8	6.6	95.9	95.9[d]	39,881.3
Range Test and Evaluation Flights Events	0.6	10.3	6.0	0.6	6.4	6.4[d]	2,687.5
Range Ground Events							
Munitions and Energetics Use at Target and Test Sites	--	0.4	3.4	0.1	6.0	0.2	358.5
Ground Vehicle Events[b]	0.0	0.1	0.8	0.0	81.1	8.1	116.8
Other Stationary Sources							
Boiler, generator, etc.	20.0	55.5	39.7	0.8	12.9	12.9[d]	2,496.8
Totals[c]	367.4	226.2	1,214.7	8.1	202.3	123.5	46,540.9
Existing/Baseline Total	337.6	178.2	1,069.0	6.0	169.4	106.3	37,304.1
Percent Increase (%) Above Existing/Baseline Condition	9	27	14	35	19	16	25
Impact Significance Determination							
Incremental Totals (Proposed Action – Existing/Baseline)	29.9	48.0	145.7	2.1	32.9	17.2	9,236.8
Screening-Level Criteria for Potentially Significant Impacts	250	250	250	250	100/70	250	25,000
Significant Impact?	No	No	No	No	No	No	No

Notes:
[a] Includes airfield-related flight activity and aircraft maintenance activities and addition unmanned aerial vehicle flight activity on airfield and ranges.
[b] Includes vehicle exhaust emissions and fugitive dust from vehicles.
[c] Due to rounding, totals may differ slightly.
[d] Conservatively assume to be the same as PM_{10}.
[e] Metric tons.

However, while the Proposed Action can be thought of as encompassing all or nearly all of the emissions depicted in Table 4.3-1, it should be noted that renewal of the land withdrawal at NAWSCL is primarily administrative in nature, and that implementation of the Proposed Action would basically entail the continuation of current and long-standing DoN activities at NAWSCL, including the emissions historically associated with those activities. Accordingly, new emissions generated as a result of the Proposed Action would not equal, or even come close to, the overall amounts set forth in the Totals line of Table 4.3-1. Instead, a clear-to-overwhelming majority of the overall emissions associated with the Proposed Action would represent existing/baseline conditions as a practical matter, with new emissions under the Proposed Action representing percentage increases above existing/baseline conditions ranging from a low of 9 percent (for VOC) to a high of 35 percent (for SO_2). Therefore, for purposes of this EIS/LEIS,

analysis of air quality-related impacts under the Proposed Action focuses on emissions associated with the potential increases in RDAT&E and training activities.

Emissions associated with the existing/baseline conditions are discussed in the context of the Baseline Alternative/Updated No Action Alternative, under which air quality emissions would remain essentially the same as the existing condition discussed in Chapter 3.3.

Under the No Action Alternative, since no action components were specifically identified for either mission or construction/demolition activities, the emissions could not reasonably have been forecasted and discussed in this analysis. Because the land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of "no action" conditions at NAWSCL; therefore, the discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed (please see discussion in Section 2.3.3).

4.3.2 Determination of Emissions Impact Significance

Criteria Pollutants

Emissions from sources associated with the proposed project would occur in areas that are in attainment of the NAAQS for criteria pollutants, with the exception of nonattainment and attainment/maintenance areas for PM_{10} (refer to Figure 3.3-2). The General Conformity Rule is not applicable to the attainment areas; however, general conformity does apply to the nonattainment and the attainment/maintenance areas for PM_{10}. NEPA and its implementing regulations require analysis of the significance of air quality impacts from these sources and from non-major stationary sources. However, neither NEPA nor its implementing regulations have established criteria for determining the significance of air quality impacts from such sources in CAA attainment areas.

Since the Proposed Action and alternatives would occur mostly in areas that have been in attainment, this EIS/LEIS has selected the "major stationary source" definition (250 tons per year or more of any air pollutant subject to regulations under the CAA) from the Prevention of Significant Deterioration (PSD) program as screening-level threshold criteria for considering potential significance for criteria pollutants other than PM_{10}. Accordingly, the PSD program levels are used as an initial threshold in determining whether impacts associated with emissions of the pollutants in question within areas that are in attainment are potentially significant, so as to require more detailed analysis under NEPA. Emissions not exceeding these thresholds are presumed to be less than significant.

As noted above, neither the PSD permitting program nor the General Conformity Rule are applicable to those mobile sources and non-major stationary sources in attainment areas. Therefore, the EIS/LEIS analyzes incremental emissions from those sources in attainment areas, incorporating the designated screening-level criteria (250 tons per year) solely in order to inform the public and decision makers about the relative air quality impacts from the Proposed Action and other alternatives in accordance with the requirements of NEPA. For the reasons set forth above in Section 4.3.1, analysis of air quality-related environmental impacts under the Proposed Action will focus on impacts associated with the proposed increase in RDAT&E and training activities relative to existing/baseline conditions.

In the General Conformity Rule (applicable to non-attainment and attainment/maintenance areas), USEPA uses the "major stationary source" definition under the New Source Review program as the *de minimis* levels to separate presumably exempt actions from those requiring a positive conformity determination. Since NAWSCL is within five planning areas of either PM_{10} nonattainment or attainment/maintenance, under the General Conformity Rule, net changes in emissions, as compared to existing/baseline conditions, associated with mission and construction activities from a proposed federal action, both direct and indirect, must be quantified and compared to annual *de minimis* (threshold) levels

for pollutants that occur within each applicable nonattainment area. Direct emissions are emissions of a criteria pollutant or its precursors that are caused or initiated by a federal action and occur at the same time and place as the action. Indirect emissions are emissions occurring later in time and/or further removed in distance from the action itself. Indirect emissions must be included in the determination, if both of the following apply:

- The federal agency proposing the action can practicably control the emissions and has continuing program responsibility to maintain control; and
- The emissions caused by the federal action are reasonably foreseeable.
- In this EIS/LEIS, the thresholds below were used to determine whether there would potentially be significant air quality impacts associated with the Proposed Action, based on net increases in emissions as compared to existing/baseline conditions: 250 tons per year for each attainment pollutant;
- 100 tons per year for PM_{10} nonattainment or maintenance pollutant; and
- 70 tons per year for PM_{10} nonattainment pollutant within the Owens Valley serious nonattainment area.

Greenhouse Gas Emissions

As discussed in Chapter 3.3, the primary long-lived GHGs emitted by human activities are CO_2, CH_4, nitrous oxide, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). The heating effect from these gases is considered the probable cause of the global warming observed over the last 50 years (USEPA 2009a). The USEPA Administrator has recognized potential risks to public health and welfare of GHGs, and signed an endangerment finding regarding GHGs under Section 202(a) of the CAA (USEPA 2009a), which finds that the current and projected concentrations of the six key well-mixed GHGs (CO_2, CH_4, nitrous oxide, HFCs, PFCs, and SF_6) in the atmosphere threaten the public health and welfare of current and future generations. To estimate global warming potential (GWP), all GHG emissions are expressed relative to a reference gas, CO_2, which is assigned a GWP equal to 1. All six GHGs are multiplied by their GWP and the results are added to calculate the total CO_2e.

However, even after adjusting for GWP, the dominant GHG gas emitted is CO_2, mostly from fossil fuel combustion (85.4 percent) (USEPA 2009b). Weighted by GWP, CH_4 is the second largest component of emissions, followed by nitrous oxide. Furthermore, among the primary long-lived GHGs emitted by human activities, only CH_4 and nitrous oxide have the potential to be produced from fossil fuel combustion sources (USEPA 2009b).

Although the USEPA final rule on Mandatory Reporting of Greenhouse Gases (October 30, 2009) provides various methodologies to estimate CO_2e based on fuel test and consumption data, this rule is essentially designed for specific stationary facility reporting purposes, and cannot be implemented in this EIS/LEIS to address the emissions from RDAT&E and training activities associated with the Proposed Action. Most of the USEPA emission factor tools that are widely used for NEPA study purposes do not provide emission factors for CO_2e other than for CO_2. Therefore, given the lack of regulatory tools to provide reasonable estimates of CO_2e, this EIS/LEIS uses the inventory ratios among CO_2, CH_4, and nitrous oxide summarized in the most recent USEPA inventory report (USEPA 2009b). In the inventory, it shows that the GHG contribution from CH_4 and nitrous oxide is less than 1 percent of the total CO_2e for fossil fuel combustion sources. Given such small contributions from other GHG equivalents compared to CO_2, this EIS/LEIS predicts CO_2e levels in terms of CO_2 levels.

This EIS/LEIS follows the Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas issued by the Council on Environmental Quality (CEQ) (2010). The potential effects of proposed GHG emissions are by nature global and cumulative impacts, as individual sources of GHG emissions are typically not large enough to have an appreciable effect on climate change. In keeping with CEQ guidance, the CEQ-suggested 25,000 metric tons of meaningful GHG emissions levels was used as an indicator of a potential need for a qualitative GHG impact assessment. Therefore, if the net increase in CO_2 levels from the Proposed Action were predicted to be less than 25,000 metric tons, the GHG emissions effects of such an increase would be considered less than significant on that basis, and no further assessment of climate change-related impacts would be necessary.

4.3.3 Proposed Action (Alternative 1)

The Proposed Action includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013); revision and implementation of the CLUMP; and accommodation of an increase in RDAT&E and training activities of up to 25 percent, expansion of unmanned aerial and surface systems, and expansion of existing and introduction of evolving DE weapons development. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised and implemented to manage land use and environmental resources.

4.3.3.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. As a legislative action, the public land withdrawal renewal, in itself, would not have any direct or indirect impacts on air emissions at NAWSCL, or affect the attainment status of criteria pollutants within the air basins; however, the various activities that would occur under the Proposed Action would generate emissions. The analysis for potential air quality impacts associated with these activities is presented in the subsections below.

Military Uses

The Proposed Action generally represents an up to 25 percent increase over activities provided in the Baseline Alternative/Updated No Action Alternative, plus other mission increases detailed in Section 2.3.2 of this EIS/LEIS. As discussed in Section 4.3.1 above, Table 4.3-1 summarizes total emissions associated with the Proposed Action and the net increase of emissions over the emissions of existing baseline conditions. The Proposed Action would result in an adverse air quality impact since the total emissions under the Proposed Action would be greater than existing/baseline conditions as shown in Table 4.3-1. Again, the predicted increases in emissions range from 9 to 35 percent for analyzed pollutants. It should be noted that while the airfield aircraft events are major contributors to the Installation-wide total emissions, they do not require air operational permits under the CAA.

As discussed previously in Chapter 4.3.2, whether the Proposed Action would result in a significant adverse air quality impact depends on the magnitude of any net emissions increase above existing/baseline conditions, with the threshold question being whether any such net increase would exceed the screening-level criteria for potential significance selected by this EIS/LEIS for each analyzed pollutant.

As shown in Table 4.3-1, the increased emissions associated with the Proposed Action would be below *de minimis* values for PM_{10}, even by conservatively combining all incremental emissions within all six nonattainment, nonattainment/maintenance, and attainment/unclassified planning areas and comparing with the lowest *de minimis* level of 70 tons per year applicable for the one serious PM_{10} nonattainment area. Therefore, the increased emissions under the Proposed Action are anticipated to be well below *de*

minimis levels, and, thus, the General Conformity Rule would not be applicable to actions associated with the Proposed Action.

Although the actual Installation-wide stationary source emissions would increase under the Proposed Action, it is anticipated that the current NAWSCL Title V permitted stationary source operational capacity would not change, and, thus, it is unlikely the Proposed Action would be subject to the PM_{10} nonattainment NSR requirements. However, a review of Title V permit conditions would be made in the future if a stationary source upgrade is necessary in order to accommodate the proposed tempo-increase action.

Furthermore, the net increases in emissions levels for other attainment criteria pollutants would be well below the 250 tons per year screening-level criteria for potential significance selected by this EIS/LEIS. Therefore, potential air quality impacts would not be significant. The General Conformity Applicability Analysis is included in Appendix G.

Nonmilitary Uses

Under the Proposed Action, existing Native American, geothermal, research and education, and recreational activities would continue at NAWSCL. Existing nonmilitary uses at NAWSCL produce a negligible amount of air pollutant emissions. Most activities involve a limited amount of vehicular use, and, thus, a limited amount of emissions. Therefore, nonmilitary activities would not result in significant air quality impacts, and would have only minimal potential to have cumulative air quality impacts.

CLUMP Implementation

Implementation of the CLUMP would serve as a mechanism to implement NAWSCL's 2011 AICUZ Update. The emissions analysis of the Proposed Action is based on aircraft events estimates in the 2011 AICUZ Update. The AICUZ Study provides compatibility guidelines for on- and off-installation land use planning activities. The CLUMP would facilitate the use of land use compatibility criteria presented in the Installation's 2011 AICUZ Update to support land use planning and decision processes at NAWSCL. The 2011 AICUZ Update compatibility guidelines have been provided to local and regional planning agencies with NAWSCL's recommendation for inclusion in their respective general and specific plans. The CLUMP's use of land use compatibility criteria in planning processes would represent a beneficial impact to air quality sensitive receptors within the ROI, since potential conflicts between localized military emissions and air quality sensitive receptors could potentially be avoided or minimized through proactive land use planning.

Cumulative Impacts

The cumulative projects identified for the NAWSCL area would not be expected to have any significant cumulative air quality impacts in conjunction with the Proposed Action. Emissions from on-installation construction projects (e.g., solar energy field and new school construction) would be minimized by controlling fugitive dust; these emissions would only have temporary effects and would not result in significant impacts. The accommodation of evolving mission needs would likely result in minor changes to air emissions from on-installation activities (e.g., expanded EOD training area); based on the number of training events and types of activities, air emissions from these activities is not anticipated to result in appreciable air quality effects.

Off-installation projects of potential interest from a cumulative impact perspective include the Ridgecrest Solar Power Project, the Solar Energy Project occurring at NAWSCL, the Digital 395 Project, agricultural development, and the proposed zeolite mine. However, a fiberoptic line will be installed on NAWSCL that connects Michelson Lab and on-installation schools to the Digital 395 system, The EA prepared for this "branch" to the Digital 395 main line indicated that no significant air quality impacts would result from installation of this line (Chambers Group 2011). Construction-related air quality impacts associated with

these projects would be temporary, with localized air quality impacts. Clearing of land for agricultural development could result in an increase in dust (particulate matter) emissions during windy conditions. Air emissions associated with construction projects would be minimized by controlling fugitive dust and would not be expected to have significant air quality impacts. After construction activities are completed, operation of the solar facilities and the Digital 395 system would not result in significant air quality emissions. Consequently, these projects would not have significant long-term impacts on overall air quality in the region. Solar energy projects must keep dust to a minimum through the use of dust control measures because a film of dust on the mirrors reduces their efficiency for power production, so regionally, fugitive dust is anticipated to decrease after the solar projects are constructed (Solar Millennium 2009). Additionally, it should be noted that the Digital 395 Project would occur over a corridor that is over 200 miles in length, so total emissions from construction activities would be spread over a much larger area for that project. The proposed zeolite mine is approximately 40 miles northeast of the South Range with the Panamint Mountain Range physically separating the mine from NAWSCL. Therefore, emissions associated with zeolite mining activities would not result in significant air quality impacts when combined with NAWSCL mission activities.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative air quality impacts as it relates to other military land withdrawal actions in the region.

This alternative would be compatible with the City of Ridgecrest General Plan. Continuation of geothermal plant operations, the Deep Rose Geothermal Exploratory Project, and Haiwee Geothermal Leasing Area activities do not involve a high level of construction or ground disturbance; therefore, these projects would not be expected to have air quality impacts.

Greenhouse Gases

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

The net increase in annual GHG emissions of 9,237 metric tons per year predicted for the Proposed Action (see Table 4.3-1) is well below the CEQ meaningful assessment threshold of 25,000 metric tons per year. Accordingly, the Proposed Action would not result in a significant impact on overall global or U.S. cumulative GHG emissions and global climate change.

Based on available quantitative air quality analysis provided in the Ridgecrest Solar Power Project Application for Certification and the Environmental Assessment/Initial Study for the Digital 395 Project, these projects, when combined with anticipated NAWSCL mission activities, would result in a combined GHG emission level of 23,223 metric tons per year (Table 4.3-2). Therefore, these projects, when combined with the Proposed Action, would still be below the meaningful assessment threshold of 25,000 metric tons per year and represent roughly 0.0003 percent of total U.S. 2010 greenhouse gas emissions, and therefore would not result in a significant impact on overall global or U.S. cumulative GHG emissions and global climate change. This level of GHG emissions would occur only if the construction period for both projects occurs during the same time period. Again, it should be noted that the Digital 395 Project occurs over a corridor that is over 200 miles in length, so total emissions from construction activities would be spread over a much larger area for that project.

Table 4.3-2 Cumulative Greenhouse Gas Emissions

Project	Emissions Metric tons/year CO_2e
Digital 395 Project	9,206
Ridgecrest Solar Power Project	4,780
NAWSCL Proposed Action	9,237
TOTAL	23,223
Screening Level Criteria for Potentially Significant Impacts	25,000
U.S. 2010 Inventory	6,821,800,000

Sources: Chambers Group 2011; Solar Millennium 2009, U.S. EPA 2012.

Air quality impacts from off-installation development projects are localized or would affect areas that are distant from NAWSCL. Emissions from on- and off-installation construction projects would be minimized by controlling fugitive dust; these emissions would only have temporary effects and would not result in cumulatively significant impacts. Consequently, no significant cumulative air quality impacts are anticipated from other projects in the region in combination with the Proposed Action.

4.3.3.2 Mitigation Measures and Impact Avoidance and Minimization Measures

Mitigation Measures

Dust control measures would continue to be implemented during construction activities to minimize fugitive dust emissions.

Impact Avoidance and Minimization Measures

No impact avoidance and minimization measures are proposed.

Summary of Impacts

Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not in itself have any direct or indirect impact on air emissions at NAWSCL, or affect the attainment status of criteria pollutants within the air basins; however, the various activities that would occur under the Proposed Action would generate emissions.

The Proposed Action would result in an adverse air quality impact since the total emissions under the Proposed Action would be greater than existing/baseline conditions. The increased emissions under the Proposed Action are anticipated to be well below *de minimis* levels; thus, the General Conformity Rule would not be applicable to actions associated with the Proposed Action. Although the actual installation-wide stationary source emissions would increase under the Proposed Action, it is anticipated that the current NAWSCL Title V permitted stationary source operational capacity would not change and, thus, it is unlikely the Proposed Action would be subject to the PM_{10} nonattainment NSR requirements. However, a review of Title V permit conditions would be made in the future if a stationary source upgrade is necessary in order to accommodate the proposed tempo-increase action.

Furthermore, the net increases in emissions levels for other attainment criteria pollutants would be well below the 250 tons per year screening-level criteria for potential significance selected by this EIS/LEIS. Therefore, potential air quality impacts would not be significant.

Existing nonmilitary uses at NAWSCL produce a negligible amount of air pollutant emissions. Most activities involve a limited amount of vehicular use, and thus a limited amount of emissions. Therefore, nonmilitary activities would not result in significant air quality impacts.

The CLUMP's use of land use compatibility criteria in planning processes would represent a beneficial impact to air quality sensitive receptors within the ROI, since potential conflicts between localized military emissions and air quality sensitive receptors could be avoided or minimized through proactive land use planning.

Emissions from on-installation construction projects would be minimized by controlling fugitive dust (these impacts would only have temporary effects) and would not result in cumulatively significant impacts and they would have only temporary effects. Air emissions associated with construction projects would be minimized by controlling fugitive dust and would not be expected to result in significant cumulative air quality impacts. Proposed infrastructure improvement projects may result in increased vehicle traffic and higher traffic speeds along the improved roadways, but would also provide improved traffic flow and less idling. Vehicle emissions may decrease somewhat due to reduced traffic congestion during peak periods. The Proposed Action in conjunction with other cumulative projects would not result in a cumulatively significant air quality impact.

The net increase in annual GHG emissions of 9,237 tons per year predicted for the Proposed Action is well below the CEQ meaningful assessment threshold of 25,000 metric tons per year. Accordingly, the Proposed Action would result in a less-than-significant impact on overall global or U.S. cumulative GHG emissions and global climate change. No specific GHG emission mitigation measures would be warranted.

Net increases of emissions associated with activities that would occur under the Proposed Action are below the PSD program levels and General Conformity Rule de minimis values that serve as screening-level criteria for potentially significant environmental impacts; therefore, the overall, potential air quality impacts from implementation of the Proposed Action would not be significant (Table 4.3-3).

4.3.4 Baseline Alternative/Updated No Action Alternative (Alternative 2)

The Baseline Alternative/Updated No Action Alternative includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013) with continuation of military activities at current levels. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised, as appropriate, and implemented to manage land use and environmental resources at NAWSCL.

4.3.4.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. As a legislative action, the public land withdrawal renewal, in itself, would not have any direct or indirect impacts on air emissions at NAWSCL, or affect the attainment status of criteria pollutants within the air basins. The analysis for potential air quality impacts is presented in the subsections below.

Table 4.3-3
Proposed Action (Alternative 1) – Summary of Air Quality Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses	
No significant impacts.	*Mitigation Measures* Implement dust control measures during construction. *Impact Avoidance and Minimization Measures* No impact avoidance and minimization measures.
Nonmilitary Uses	
No significant impacts.	*Mitigation Measures* Implement dust control measures during construction. *Impact Avoidance and Minimization Measures* No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
No significant impacts.	*Mitigation Measures* Implement dust control measures during construction. *Impact Avoidance and Minimization Measures* No impact avoidance and minimization measures.
Overall Summary	
No significant impacts.	*Mitigation Measures* Implement dust control measures during construction. *Impact Avoidance and Minimization Measures* No impact avoidance and minimization measures.

Military Uses

Under the Baseline Alternative/Updated No Action Alternative, established military RDAT&E, including range and Armitage Airfield aircraft events, training and support activities, and associated military land use, would continue at existing levels and within areas currently designated for such uses. Additional information regarding existing levels of military use is outlined in Table 2-2 in Chapter 2 of this EIS/LEIS. Because NAWSCL would continue to conduct the same number of annual flight events and weapons-testing activities on its ranges as are currently conducted, air quality conditions around NAWSCL would remain the same as described under the existing conditions in Section 3.3. Therefore, potential impacts would not be significant.

Nonmilitary Uses

Under the Baseline Alternative/Updated No Action Alternative, existing Native American, geothermal, research and education, and recreational activities would continue at NAWSCL. Existing nonmilitary uses at NAWSCL produce a negligible amount of air pollutant emissions. Most activities involve a limited amount of vehicular use, and, thus, a limited amount of emissions. Therefore, nonmilitary activities would not result in significant air quality impacts, and would have only minimal potential to have cumulative air quality impacts.

CLUMP Implementation

Implementation of the CLUMP would serve as a mechanism to implement NAWSCL's updated 2011 AICUZ Study. The emissions analysis of the Proposed Action is based on aircraft events estimates in the AICUZ Study. The AICUZ Study provides compatibility guidelines for on- and off-installation land use planning activities. The CLUMP's use of land use compatibility criteria in planning processes would represent a beneficial impact to air quality sensitive receptors within the ROI, since potential conflicts between localized military emissions and air quality sensitive receptors could potentially be avoided or minimized through proactive land use planning.

Cumulative Impacts

Cumulative impacts anticipated under the Baseline Alternative/Updated No Action Alternative would be similar to the likely cumulative impacts associated with the Proposed Action, only to a somewhat lesser extent or intensity, insofar as NAWSCL's cumulative impacts would be expected to be somewhat lower under the Baseline Alternative/Updated No Action Alternative because this alternative would not include the potential increase in RDAT&E and training activities.

As discussed above, no significant cumulative impacts are expected under the Baseline Alternative/Updated No Action Alternative. The cumulative projects identified for the NAWSCL area for the Proposed Action in Section 4.3.3.1 would also pertain to the Baseline Alternative/Updated No Action Alternative and would not be expected to have significant cumulative air quality impacts in conjunction with the Baseline Alternative/Updated No Action Alternative, for the same reasons set forth in Section 4.3.3. The Baseline Alternative/Updated No Action Alternative would not result in any changes to existing air emissions or air quality at NAWSCL and would have less potential air quality impacts than the Proposed Action. Emissions from on-installation construction projects (e.g., solar energy field and new school construction) would be minimized by controlling fugitive dust and would not result in significant impacts. The accommodation of expanded EOD training area would likely result in minor changes to air emissions from on-installation activities; however, based on the number of training events and types of activities, air emissions from these activities is not anticipated to result in appreciable air quality effects.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative air quality impacts as it relates to other military land withdrawal actions in the region.

Air quality impacts from off-installation development projects are localized or would affect areas that are distant from NAWSCL. Clearing of land for agricultural development could result in an increase in dust (particulate matter) emissions during windy conditions. Emissions from on- and off-installation construction projects would be minimized by controlling fugitive dust; these emissions would only have temporary effects and would not result in cumulatively significant impacts. Consequently, no significant cumulative air quality impacts are anticipated from other projects in the region in combination with the Baseline Alternative/Updated No Action Alternative.

4.3.4.2 Mitigation Measures and Impact Avoidance and Minimization Measures

Mitigation Measures

Dust control measures would continue to be implemented during construction activities to minimize fugitive dust emissions.

Impact Avoidance and Minimization Measures

No impact avoidance and minimization measures are proposed.

Summary of Impacts

Since the land withdrawal is a renewal of a previously approved land withdrawal, it would not have any direct or indirect impact on air emissions at NAWSCL, or affect the attainment status of criteria pollutants within the air basins.

NAWSCL would continue to conduct the same approximate number of annual flight events and weapons-testing activities on its ranges as are currently conducted and air quality conditions around would remain unchanged. Therefore, potential air quality impacts would not be significant.

Existing nonmilitary uses at NAWSCL produce a negligible amount of air pollutant emissions and would not result in significant air quality impacts.

The CLUMP's use of land use compatibility criteria in planning processes would represent a beneficial impact to air quality sensitive receptors within the ROI, since potential conflicts between localized military emissions and air quality sensitive receptors could potentially be avoided or minimized through proactive land use planning.

The Baseline Alternative/Updated No Action Alternative would not result in any changes to existing air emissions or air quality at NAWSCL and would contribute less than the Proposed Action to cumulative air quality impacts. Emissions from on-installation construction projects would be minimized by controlling fugitive dust and would not result in cumulatively significant impacts. Therefore, the Baseline Alternative/Updated No Action Alternative would not result in any significant cumulative air quality impacts.

Emissions associated with activities that would occur under the Baseline Alternative/Updated No Action Alternative would remain the same as compared to existing conditions described in Chapter 3.2; therefore, the overall, potential air quality impacts from implementation of the Baseline Alternative/Updated No Action Alternative would not be significant (Table 4.3-4).

4.3.5 No Action Alternative (Alternative 3)

Because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of "no action" conditions at NAWSCL; therefore, the discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed (please see discussion in Section 2.3.3). For the purposes of the Final EIS/LEIS, the Baseline/Updated No Action Alternative is considered to effectively represent "no action" conditions or status quo (see Section 4.3.4).

Table 4.3-4
Baseline Alternative/Updated No Action Alternative (Alternative 2) – Summary of Air Quality Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses	
No significant impacts.	*Mitigation Measures* Implement dust control measures during construction. *Impact Avoidance and Minimization Measures* No impact avoidance and minimization measures.
Nonmilitary Uses	
No significant impacts.	*Mitigation Measures* Implement dust control measures during construction. *Impact Avoidance and Minimization Measures* No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
No significant impacts.	*Mitigation Measures* Implement dust control measures during construction. *Impact Avoidance and Minimization Measures* No impact avoidance and minimization measures.
Overall Summary	
No significant impacts.	*Mitigation Measures* Implement dust control measures during construction. *Impact Avoidance and Minimization Measures* No impact avoidance and minimization measures.

This page intentionally left blank.

4.4 BIOLOGICAL RESOURCES

This section identifies potential impacts to biological resources that may result from implementing each of the alternatives at NAWSCL. The analysis evaluates those activities that have the potential to affect biological resources.

Since 1943, approximately eight percent of NAWSCL lands have been developed for test, target, and other facilities such as administration areas, maintenance facilities, roads and parking lots. As of this writing, fewer than 15,000 acres (1.36 percent) of the approximately 1.1 million acres (445,156 hectares) that make up NAWSCL are dedicated to target and test sites (U.S. Navy 2005a). Approximately 92 percent of NAWSCL land remains in a relatively undisturbed condition, serves as safety and security buffer zones, and is managed for the conservation of biological resources to the extent practicable.

Conservation benefits are afforded to all biological resources on NAWSCL lands through application of land use controls such as restricting operations to existing test, target, instrumentation, and other sites and enforcement of prohibitions on indiscriminant off-road travel and other sources of unauthorized off-site impacts. In accordance with the CLUMP, the proposed mission increases would occur within established land use patterns throughout the NAWSCL ranges. No new targets, test sites, or other sources of significant surface disturbing activities are currently being proposed.

The majority of the activities described under the various alternatives are the continuation of and potential increase in existing activities analyzed during previously completed environmental reviews, although typically at lower levels of frequency or intensity in comparison to the Proposed Action. There are activities and related potential impacts, such as the use of DE systems and the effect of fire that were not addressed in the 2004 EIS, 2005 CLUMP, or previous BOs. NAWSCL initiated the Section 7 consultation for the development of these actions and USFWS issued a BO (8-8-12-F-29) on February 19, 2013 (see Appendix J).

Current activities that may impact federally listed threatened or endangered species are conducted in accordance with the 2013 BO (8-8-12-F-29) and all applicable laws and regulations, as well as standard impact avoidance and minimization procedures.

4.4.1 Approach to Analysis

Methodology and Evaluation Criteria

Biological resource issues and concerns include the potential direct, indirect, and cumulative impacts of the Proposed Action and alternatives during proposed project activities. Impacts may be either temporary (reversible) or permanent (irreversible). This section analyzes the potential impacts to biological resources by activity/event for each alternative. For this analysis, biological resources are broken down into the following 4 categories:

- Federally listed threatened and endangered species on NAWSCL (Mohave tui chub, desert tortoise, southwestern willow flycatcher, least Bell's vireo, and Inyo California towhee);
- NAWSCL special status plant and wildlife species;
- Other federally protected species; and
- Non-special status species.

Significant criteria are included to facilitate the NEPA analytical process and to assist in making the ultimate determination as to whether or not an impact would be significant, and whether that impact could be avoided, minimized and/or mitigated. The following significance criteria were identified and used to assess potential impacts to biological resources associated with the project alternatives.

Impacts were determined to be significant to biological resources if they would:

5. *cause a substantial effect on federally listed threatened or endangered species (including habitat modification) or on NAWSCL special status species, or violate federal biological resource protection regulations*. This criterion is important because a project's impacts to habitat are sometimes severe enough to interrupt the necessary behaviors and activities of wildlife. Such activities include foraging, finding or building shelter, reproduction, and migration. This criterion also addresses impacts that may violate regulations and statutes specifically designed to protect plants and animals, such as the federal Migratory Bird Treaty Act.

6. *cause a substantial effect on riparian habitat.* This criterion is important because riparian habitat is relatively rare, provides important ecological values, and supports an unusually diverse range of wildlife species. For this reason, it warrants special consideration in the analysis of impacts.

7. *substantially interfere with movement of native or migrant species or substantially interfere with wildlife use.* Many wildlife species need to move within or between habitat areas, in order to hunt, forage, locate shelter when necessary, find mates for reproduction, and disperse. Therefore, it is imperative that the Proposed Action and alternatives not interfere unduly with wildlife access to these resources.

8. *substantially reduce the habitat of fish or wildlife species, or cause the populations of such species to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or substantially reduce or restrict the range of a rare, threatened, endangered, or special status species.* This criterion overlaps somewhat with criteria 1 through 3, but it also addresses other issues, such as reductions in population levels and the elimination of an entire plant or animal community, which could happen if a species' entire range is contained within a project site.

Activities associated with the Proposed Action and alternatives involve a variety of mission scenarios that use weapons systems, targets, aircraft, and ground vehicles. Elements addressed in the analysis include land withdrawal, range and airfield flight events, range ground events, DE activities, munitions expenditures, energetic material expenditures, and select nonmilitary uses. Potential impacts considered during the analysis include:

- impacts resulting from aircraft overflights and increased noise levels;
- impacts resulting from munitions impacts (including impacts from fire);
- impacts resulting from DE activities; and
- impacts resulting from an increased level of personnel and vehicular activity associated with ground-based activities.

General principles used to evaluate the above potential impacts to biological resources are:

- The extent, if any, that the Proposed Action and alternatives would permanently lessen ecological habitat qualities that ESA-listed species depend upon, and which partly determine the species' prospects for conservation and recovery.

- The extent, if any, that the Proposed Action and alternatives would diminish population sizes, distribution, or habitat of regionally important native plant or animal species.
- The extent, if any, that the Proposed Action and alternatives would be inconsistent with the goals of USFWS recovery plans, or the Installation INRMP.
- Loss of individuals or habitat that would substantially impact the size or distribution of a state or federally listed threatened or endangered species, or any population of native plant or wildlife within the northwestern Mojave Desert region.
- Loss of individuals, populations, or habitat of avian species protected by the MBTA.
- Loss of vegetation or wildlife habitat or species identified as declining or rare in the subject region.
- Loss of individuals, populations, or habitat of any California species of special concern (California Department of Fish and Game [CDFG] 2011) or CNPS List 1 B or 2 plant species (CNPS 2012).
- Removal or degradation of a natural community or ecosystem native plant and wildlife populations.

Potential impacts to biological resources are discussed in detail below. Under each alternative, potential impacts to these resources are identified and, when needed, mitigation measures are proposed to lessen the nature and extent of those impacts.

4.4.2 Proposed Action (Alternative 1)

The Proposed Action includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013); revision and implementation of the CLUMP; and accommodation of an increase in RDAT&E and training activities of up to 25 percent, expansion of unmanned aerial and surface systems, and expansion of existing and introduction of evolving DE weapons development. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised and implemented to manage land use and environmental resources.

4.4.2.1 Impacts

Land Withdrawal

The public land withdrawal and reservations previously established by the CDPA on October 31, 1994 have been renewed. While the public land withdrawal renewal, as a legislative action, would not in itself have any direct or indirect impacts on biological resources at NAWSCL, the fact of renewal would allow both continuing and new activities at NAWSCL that would have such impacts. The anticipated impacts to biological resources associated with such continuing and new activities are analyzed in the sections that follow below (e.g., Military Uses, etc.).

Military Uses

This section addresses range and airfield flight events, range ground events, DE, munitions expenditures, and energetic activities. No test or target sites occur within habitats or plant communities that are unique or considered sensitive to cumulative loss, either within the Installation boundaries or in a regional context. Most test and target sites are located within creosote bush scrub, sagebrush scrub, pinyon woodland, alkaline sink, and Mojave mixed scrub communities. Additional information regarding levels of military use associated with the Proposed Action is outlined in Table 2-2 in Chapter 2 of this EIS/LEIS.

Range Flight Events

Under the Proposed Action, the number of supersonic events could increase by up to 25 percent. Although not every supersonic flight generates a sonic boom that reaches ground level (U.S. Air Force 2001), the expected increase in the number of sonic booms reaching the ground would be anticipated at the same frequency relative to the increase in supersonic flights. Many species (including desert tortoise) have shown the ability to acclimate to supersonic noise events (U.S. Air Force 1999). The additional supersonic events would not result in a substantial change to existing conditions, given the limited increase in supersonic events, the short duration (i.e., approximately 1 to 2 seconds) of sonic boom events, and the geographic distribution of supersonic flight events over the NAWSCL ranges. USFWS issued the Revised Recovery Plan for the Mojave Population of the Desert Tortoise, which concluded that noise from jet aircraft and sonic booms are not likely to be dangerous in association with short-term exposure, but that insufficient information exists to extrapolate potential effects of exposure over the lifetime of a tortoise (USFWS 2011).

Although no specific studies on the effects of noise on wildlife have been conducted for NAWSCL, the effects of military aircraft noise on wildlife have been studied at other locations. These studies indicate various wildlife have wide-ranging responses to noise, depending upon species, and the timing of the noise event (Awbrey and Hunsaker 2000; Hunsaker and Rice 2006). Studies by Awbrey and Hunsaker indicated that noise associated with military fixed-wing aircraft and helicopter overflights had no detectable effect on reproductive success of songbirds after the nest was built.

Based on criteria established by the U.S. Air Force and the Oak Ridge National Laboratory (Braid 1992), impact categories can be defined as follows:

Negligible impacts

- No species of concern are present and no or minor impacts on any species are expected.
- Minor impacts that do occur have no secondary (long-term or population) effects.

Low impacts

- Non-breeding animals of concern are present in low numbers.
- Habitat is not critical for survival and not limited to the area targeted for overflight use; other habitat meeting the requirements of animals of concern is found nearby and is already used by those species.
- Occasional flight responses are expected, but without interference with feeding, reproduction, or other activities necessary for survival.

Moderate impacts

- Breeding animals of concern are present, and/or animals are present during particularly vulnerable life-stages such as migration or winter (depends upon the species in question).
- Mortality or interference with activities necessary to survival are expected on an occasional basis.
- Mortality and interference are not expected to threaten the continued existence of the species in the area.

High impacts

- Breeding individuals are present in relatively high numbers, and/or animals are present during particularly vulnerable life-stages.
- Habitat targeted for overflights has a history of use by the species during critical periods, and this habitat is somewhat limited to the area targeted for overflight use; animals cannot go elsewhere to avoid impacts (animals can rarely "relocate" except temporarily).
- Mortality or other effects (injury, physiological stress, effects on reproduction and young-raising) are expected on a regular basis. These effects could threaten the continued survival of the species.

Specific to NAWSCL, aircraft noise would be concentrated on or adjacent to the airfield, which is approximately 10 miles from the nearest mapped riparian habitat on the Installation. As described in the Proposed Action, the frequency of military overflights of riparian habitats would be relatively low. Observations of least Bell's vireo and willow flycatchers on the Installation occur primarily during spring and fall migration. Neither species is known to breed on the Installation. Additionally, the anticipated increase in range flight events would not result in substantial change to the existing noise environment (Section 4.2). As such, increased airfield events would result in low impacts to federally protected species, or NAWSCL special status species. Additionally, studies have indicated that in general, wildlife species acclimate to aircraft noise (Appendix I). Therefore, range flight events would not have a significant impact on any wildlife species associated with NAWSCL.

BASH events have been recorded at NAWSCL involving species afforded protection under the Migratory Bird Treaty Act (MBTA). These events are documented per the requirements of the NAWSCL BASH Plan. Implementation of the BASH Plan minimizes adverse impacts to avian species, while maintaining the mission of the Installation. The potential for a BASH event is low (approximately two per year for both range and airfield flight events). BASH concerns relate to the potential for a military aircraft to strike a bird in flight or bird or other animal on the ground. Based on historical records, an up to 25 percent increase in subsonic range flight events and up to an approximate 100 percent increase in the number of UAS flight hours could increase the potential for a BASH event from approximately two events per year to approximately three or four events per year. There have been recorded instances of BASH events involving other federally protected species (i.e., birds protected under the MBTA), including turkey vultures and pelicans.

The MBTA affords protection to most migratory and resident non-game bird species. The military has been granted a federal MBTA take authorization for activities incidental to military readiness under 50 CFR 21.15. As a requirement of the military readiness waiver, NAWSCL must consider whether an ongoing or proposed activity may result in a significant adverse effect on a population of a migratory bird species. If it is determined that such a significant population-level adverse effect may result, NAWSCL would be required to confer and coordinate with USFWS to develop conservation and/or minimization measures to mitigate the adverse effects. NAWSCL monitors BASH events and maintains records of these events, as required under the NAWSCL BASH Plan. Implementation of the BASH Plan minimizes, to the extent feasible, adverse impacts to avian species, while maintaining the mission of the Installation. Therefore, potential impacts to biological resources would not be significant.

Airfield Flight Events

Under the Proposed Action, the types of airfield events could increase by up to 25 percent. Airfield flight events do overfly areas that are identified as desert tortoise and towhee habitat, and riparian areas suitable for the least Bell's vireo and southwestern willow flycatcher. A detailed discussion of the potential impacts of aircraft noise on wildlife species at NAWSCL is discussed under range flight events, and is

applicable to the analysis of airfield flight events. The desert tortoise has been shown to be able to acclimate to loud military aircraft noise, and USFWS has concluded that noise associated with jet aircraft would not likely be dangerous to the desert tortoise (U.S. Air Force 1999, USFWS 2011). Studies by Awbrey and Hunsaker have shown that overflights by military fixed-wing aircraft do not result in a detectable effect on the reproductive success of songbirds after the nest has been completed (Awbrey and Hunsaker 2000), and various additional studies have indicated that, in general, wildlife can acclimate to aircraft noise (Appendix I). Therefore, potential impacts would not be significant.

BASH events have been recorded at NAWSCL involving species afforded protection under the MBTA. These events are documented per the requirements of the NAWSCL BASH Plan. Implementation of the BASH Plan minimizes adverse impacts to avian species, while maintaining the mission of the Installation. The potential for a BASH event is low (approximately two per year for both range and airfield flight events). Based on historical records, an up to 25 percent increase in airfield flight events at Armitage Airfield could increase the potential for a BASH event from approximately two events per year to approximately three events per year. Therefore, related impacts to avian resources would not be significant.

Range Ground Events

Target and Test Site Use. Potential effects of continued target and test site use on biological resources are discussed below. Activities occurring within existing travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, and instrumentation sites include HE, energetic tests, CIED tests, UGS activities, and test track operations. A review of the CNDDB, 2004 EIS, and the INRMP indicate that no NAWSCL special status species are known to occur within target or test site areas where vegetation has been cleared and maintained in an unvegetated or disturbed state, with the exception of species such as burrowing owl, which have been documented along the disturbed edges adjacent to roads and in boneyards and staging areas. Additionally, habitat for listed, other federally protected, and various NAWSCL special status species is known to exist within portions of a number of test and target sites that remain naturally vegetated, as well as in the buffers around the target and test sites. NAWSCL would exercise due diligence in the management of those target sites that remain naturally vegetated.

Mohave Tui Chub. Range ground activities at target and test sites associated with the Proposed Action would not affect Mohave tui chub, since habitat for this species is located away from military activities. The nearest test or training area (Kennedy Stands Target) is approximately 1 mile north of tui chub habitat at the terminus of the G1 Seep. Based on its use and location, this target site would have a low potential to affect this habitat. An EOD facility approximately 100 yards upstream of tui chub habitat conducts administrative and vehicle maintenance functions which would have at most a minimal potential to affect that habitat.

Desert Tortoise. Approximately 355 square miles (919 square kilometers) of NAWSCL lands are identified as potential desert tortoise habitat, which includes 89,310 acres (416,827 hectares) designated as critical habitat. Target and test sites in desert tortoise habitat include specified use areas on portions of Baker, Charlie, and George ranges; SNORT LMU; Mainsite LMU; Propulsion Laboratories LMU; Airport Lake LMU; Coso Geothermal LMU; and a small section of the Coso LMU on the North Range (Figure 3.4-9); and portions of Mojave B North, Randsburg Wash, and Mojave B South/Superior Valley on the South Range (Figure 3.4-10). No target and test site areas are located in desert tortoise habitat with populations greater than 20 animals per square mile (i.e., high-density habitat; refer to Section 3.4.7.2). One area of high-density habitat is located approximately 2 miles (3.2 kilometers) northwest of the PMTC site on the west portion of George Range. Because routine maintenance for vegetation clearance is not conducted at some sites and some sites have revegetated, desert tortoise could occasionally transit through these areas.

Most target areas were cleared in the past, maintained, and surrounded by designated buffer zones. However, a number of the target areas are no longer maintained, and those areas have started to be reclaimed by some vegetation patches. The buffer areas remain vegetated. Field surveys conducted in 1998 concluded that impacts outside of the designated buffer zones were infrequent (Tetra Tech 1999). The likelihood of a munitions fragment hitting an individual desert tortoise within the buffer zone is low, and has not been documented to date. NAWSCL has documented tortoise mortalities on the Installation, as required per the USFWS-issued BO for the species, since 1992 (Table 4.4-1). Infrequent tortoise take on NAWSCL has been primarily a result of motor vehicles striking tortoises on established roadways. Weapons tests have not been noted as a cause of tortoise injury or death. There is a very small potential for desert tortoise to be hit in its burrow by either munitions fragments that have impacted the ground surface with such force to create craters or munitions that has penetrated below the ground surface. Since desert tortoise and burrow density on the North Range and in most portions of the South Range is low, impacts to desert tortoise in those areas are expected to be low.

Table 4.4-1
Types and Quantity of Incidental Take for the Desert Tortoise*

Year	Mortality	Cause	Injury	Cause	Moved
1993	0	----	1	Motor vehicle impact	3 total - 1 from test site; 2 from roadways
1994	0	----	0	----	6 total - all from roadways
1995	0	----	0	----	6 total - all from roadways
1996	0	----	0	----	0
1997	0	----	0	----	0
1998	1	Motor vehicle impact	0	----	0
1999	0	----	0	----	0
2001	0	----	0	----	0
2002	0	----	0	----	0
2003	0	----	0	----	0
2004	1	Possible mortality at rock quarry	0	----	0
2005	0	----	0	----	0
2006	0	----	0	----	0
2007	0	----	0	----	0
2008	0	----	0	----	0
2009	2	Motor vehicle impact	0	----	2 total - all from roadways
2010	2	Motor vehicle impact	0	----	12 total - all from roadways
2011	0	----	0	----	0
2012	0	----	0	----	0
2013	2	Motor vehicle impact dead hatchling found under a raven nest	0	----	0

* Table does not include take that occurred in the 1990s when an employee mistakenly took two tortoise hatchlings to the local veterinarian because he thought they were injured.

NAWSCL would continue to conduct test, training, and facility ground activities in accordance with the procedures designed to minimize impacts to desert tortoises in the 2013 BO (8-8-12-F-29) (see Appendix J).

Implementing the measures set forth in the BO would help ensure that potential impacts to desert tortoises would be assessed during the project planning and approval process, and monitored for compliance with BO requirements, and that impacts would be minimized.

Southwestern Willow Flycatcher and Least Bell's vireo. Willow flycatchers and least Bell's vireos are uncommon migrants in riparian habitat in the northern portion of the Installation, however, sufficient information is not available to determine whether these migrants are the endangered subspecies. The southwestern willow flycatcher migration in California typically occurs in spring and fall, with nesting from April through the end of August. The vireo typically arrives in Southern California toward the end of March, before migrating out of the region in September, although some individuals may overwinter. The riparian areas represent potentially suitable habitat for the southwestern willow flycatcher and the least Bell's vireo.

No target or test sites are located within riparian habitat potentially suitable for either the southwestern willow flycatcher or the least Bell's vireo, and therefore the majority of potential activities associated with range ground events would not impact either species. However, fires are sometimes started by range activities (as discussed in the Fire Management section at the end of Section 4.4.2.1), and it is possible that such fires could reach riparian habitats.

Inyo California Towhee. Current range ground activities do not affect Inyo California towhee habitat because target and test sites are not located within towhee habitat. However, NAWSCL efforts to maintain safe road access to the range areas were addressed through an informal consultation with USFWS. Maintenance (trimming) of willows in the Mountain Springs Canyon area is occasionally required to facilitate safe vehicular access to the upper range areas and is conducted (when needed) in accordance with procedures established in 1990. These maintenance procedures call for trimming back the willows that extend onto the paved roadway at several points in the canyon, to occur outside of the nesting season. While vehicular traffic through towhee habitat may pose a very slight potential for Inyo California towhees to be struck by vehicles along the paved Mountain Springs Canyon Road, no towhee fatalities caused by impacts with motor vehicles have been documented to date. Since military activities in these areas do not adversely affect Inyo California towhee or towhee habitat, there would be no impacts to Inyo California towhee from the proposed increase of current target and test site use. Additionally, NAWSCL entered into a Cooperative Management Agreement (CMA) with USFWS for the management of the Inyo California towhee on June 17, 2010. The CMA outlines a series of conservation measures that NAWSCL intends to continue implementing for the benefit of the species. These measures include the consideration and avoidance (to the maximum extent possible) of potential impacts during planning efforts, removal of feral burros and horses from the Inyo California towhee's range, fencing of springs and riparian tracts within towhee habitat, removing invasive plants, and towhee population monitoring within the limits of NAWSCL.

As previously mentioned, wild fires could result in the loss of habitat (including critical habitat) for the Inyo California towhee, and displacement of towhees in habitat that is burned. Fire management is discussed at the end of this section (Section 4.4.2.1).

NAWSCL Special Status Plant and Wildlife Species. NAWSCL special status plant species have been identified in three target areas at NAWSCL: the Coso Training Range, the Coles Flat targets in the Coso LMU, and the buffer zones of the surface-to-air missile (SAM) Site and auxiliary Bullseye targets in Superior Valley. The Darwin milk-vetch, pinyon rock cress, desert bird's beak, and a plant tentatively

identified as Panamint mariposa lily are known to occur throughout the Coso Training Range. Target impact areas in the Coso Training Range are relatively small in area, with the target and buffer zones surrounded primarily by undisturbed habitat. The Mojave fish-hook cactus is known to occur at the Coles Flat target area, and is widely scattered throughout the northern portion of the North Range. On the South Range, Mojave fish-hook cactus is known to be widespread in occurrence throughout the South Range, including the buffer zones for the SAM site and the auxiliary Bullseye target in Superior Valley. Because of the large numbers of these plants scattered throughout the ranges and the lack of any identified impacts, the continuation of the current use of target and test sites at an increased tempo would not have a significant impact on NAWSCL special status plant species.

In addition to the NAWSCL special status plant species that are known within specific targets, buffers, and designated impact areas, there are a considerable number of NAWSCL special status plant species that have the potential to occur on NAWSCL, but have yet to be confirmed. These plants and the LMUs where they occur or are potentially present are provided in Section 3.4 of this document. Proposed activities or projects at NAWSCL would continue to avoid these species whenever practicable in light of mission requirements. See Section 4.4.3.2 for measures that would be considered to avoid these species.

Disturbance is limited to specific targets and surrounding buffer areas. The potential for impact to these plant species is considered to be very low. Some areas near these target and buffer areas have shown a reduction in vegetation cover or charred remnants of vegetation potentially as a result of military activities. Continued application of the Installation's fire management strategy (see Section 3.4.10) would to the extent practicable, minimize potential impacts to sensitive plant and wildlife species that may be in or near the affected area. Fire management is discussed at the end of this section (Section 4.4.2.1).

Potential impacts from range ground activities of the Proposed Action to NAWSCL special status plant species are expected to increase by up to 25 percent. NAWSCL special status plant species known to occur in the vicinity of range ground activities are relatively widely distributed in suitable habitat areas on the Installation, and current impacts are therefore not considered significant. Increased activities are expected to be maintained within the same footprints as current sites and buffers. Additionally, NAWSCL special status species would continue to be managed by implementation of existing land use protocols, would continue to be given appropriate consideration during project planning efforts, and since impact avoidance and minimization measures would continue to be implemented to the extent practicable, impacts to these species should remain less than significant.

Various NAWSCL special status wildlife species have been documented as occurring within some of the proposed disturbance footprints at target or test site areas. The documentation primarily exists as California Natural Diversity Database (CNDDB) Rarefind data, such as Mohave ground squirrel, prairie falcon, and LeConte's thrasher, observations supplemented by anecdotal observations. Invertebrate species such as Jerusalem crickets, dune cockroaches, dune weevils, and giant fairy shrimp, bird species such as burrowing owl, and mammals such as the Argus Mountain kangaroo rat, may occur within the primary buffer zones of the target and test sites. Results of field surveys characterizing the ground disturbance patterns around target and test sites throughout the NAWSCL ranges (Tetra Tech 1999) indicated that the extent of ancillary impacts to the impact area buffer zones is minimal. While there is some potential for an individual animal to be affected by ongoing munitions use at these sites, the likelihood of significantly affecting any NAWSCL special status species is low. While the areas surveyed do not represent complete surveys of either NAWSCL or the various target and test sites, it is reasonable to extrapolate from these partial surveys that continuation of the current use of target and test sites would have a correspondingly low impact on NAWSCL special status wildlife species.

Major playa lakes on NAWSCL include China Lake, Mirror Lake, Satellite Lake, Paxton Ranch Playa, and Airport Lake, all within the North Range, and Movie Lake in the South Range. In addition, there are as

many as 80 smaller unnamed playas ranging from hundreds of acres to less than one acre within the ranges. Many lake playas including Mirror Lake, China Lake, and Airport Lake support giant fairy shrimp, a NAWSCL special status species. Primarily lightweight vehicles travel on the lakebed in support of RDAT&E activities. These types of vehicles have minimal effect on the lakebed surface, which is very hard and not used when wet. Therefore, use of target and test sites has a low impact on biological resources within playas.

Wild Horses and Burros. Management of wild horses and burros on NAWSCL adheres to the Sikes Act, the FLPMA, and the Wild Free Roaming Horses and Burros Act. Wild burros presently occur on both the North and South Ranges. Horses continue to graze primarily in the higher elevations of the Coso and Argus Mountain areas on the North Range. NAWSCL implements the feral horse and burro management strategies set forth in the INRMP to maintain a viable population of wild horses on the North Range of the Installation. As discussed in Section 1.2.2.1, a revised WHBMP has been adopted as part of the 2014 update to the Installation's INRMP..

The 2013 WHBMP, a program that provides overall direction and strategy for managing wild horses and burro populations on NAWSCL, is part of the 2014 INRMP update. Some of the management goals of the WHBMP include:

- Maintain the Centennial Horse Herd within a range of 100 to 168 animals to allow for range recovery, and to maintain genetic variability and herd health. Allow for changes in this initial range over time based on habitat condition, vegetation utilization, animal numbers and distribution, and herd health.
- Achieve and maintain the burro population at zero.
- Keep the herd healthy and self-sustaining by maintaining and improving rangeland condition. Remaining horses would be healthier and better able to survive stressful periods such as prolonged droughts and harsh winters when the rangeland resource is in a self-sustaining condition.
- Maintain herd genetic variability/diversity by periodically conducting genetic analysis on the horse herd and, if warranted, by the possible introduction of animals from other suitable herd areas, removal of young animals and/or by increasing the number of male horses and therefore the number of possible harems.
- Implement a proactive fertility control program through the application of a contraceptive to breeding age mares.
- Increase the health and adoptability of horses by taking only young animals when extracting excess, by allowing the breeding herd to live out their lives on the range, and by carefully selecting the young animals to be retained. The younger animals are more marketable to the adopting public and the herd genetic quality would improve through thoughtful selection of breeding herd recruitment.
- Minimize the cost of reducing and maintaining desired population levels.
- Minimize damage to water resources, riparian areas, uplands, and cultural resources through herd reduction, and thereby facilitate and increase the rate of native plant and animal population recovery, including federally listed species.
- Provide for an enhanced habitat assessment program to monitor forage utilization and recovery and an animal monitoring program to document herd size, health, and distribution.

NAWSCL would not, except as an act of mercy, destroy any wild horse or burro without appropriate authorization. Sick or lame animals would be destroyed, when necessary, in the most humane manner possible. While there is some potential for wild horses and burros to be affected by ongoing test and training operations, the majority of the wild horses and burros on NAWSCL are located in the higher elevations on the North Range. Therefore, the likelihood of significantly affecting any wild horses or burros is low.

The Installation would continue to attempt to reduce the burro population to zero animals through annual roundups and BLM's adoption program. The WHBMP would allow for enhanced management techniques including use of contraceptives; an attempt to place animals into long-term holding facilities, and placement with other organizations, humane groups, Native American tribes, etc. Adopting individuals or groups would still be required to meet BLM adoption guidelines to ensure that they have the ability to properly care for animals and to ensure animals are not acquired simply to dispose of them for profit. Eliminating burros would protect tortoise and other habitats on both the North and South Ranges, would preclude additional burro impacts in towhee habitats, would allow for more rapid forage recovery, and would benefit the wild horse herd by removing competition for resources.

Roundup operations would be managed by the EMD and are subject to an environmental review process and NEPA documentation requirements. Vehicle use during the roundups would be confined to existing roads and established cleared sites. Run trap placement and horseback operations are located in surveyed areas that do not impact protected natural or cultural resources.

NAWSCL would continue to implement the feral horse and burro management strategies in the 2014 INRMP. Animals removed are less than 3 years in age to facilitate rapid adoption through the BLM program. Removals of excess horses are necessary to improve the rangeland condition and keep the herd healthy, genetically viable, and self-sustaining. Maintaining the desired herd size would also reduce impacts to natural resources (particularly in tortoise and towhee habitats) and allow for recovery of preferred forage items. Horses would benefit from the increase in forage and decrease in competition and be better able to survive harsh winters and drought conditions. Therefore, the continued management in accordance with the INRMP would have a positive effect on the respective herds as well as natural resources generally.

Impacts Associated with Wild Horses and Burros. Assessment of impacts to wild horses and burros, and impacts caused by or related to the presence of wild horses and burros at NAWSCL, primarily reflect the continuing utilization of wild horse and burro management practices set forth in the updated INRMP with a new WHBMP (as discussed on the preceding page and in Section 1.2.2.1).

As discussed in Section 3.4.9, the current Centennial Horse Herd (Herd) population is around 450–500 horses, which is approximately three times the upper limit of the appropriate management level (AML), and around 150 burros. As part of the management strategies for these animals, the DoN conducts gathers of both horses and burros with the support of the BLM in order to remove excess animals from both the North and South Ranges. With respect to vegetation—both special status and non-special status species—direct impacts associated with wild horse and burro gathers would consist of minor, temporary disturbance to vegetation immediately in and around the gather site(s) and temporary holding pens. Human impacts would be created by foot traffic at gather sites and holding pens that would disturb vegetation. Wild horse impacts as a result of herding concentrations could be moderate in the immediate vicinity of the gather site(s) and holding pens. Generally, these sites would be small (less than one-half acre) in size. Any impacts would remain site specific and isolated in nature and would include trampling of vegetation. Long-term impacts would be minimal as herding would have a short-term duration, and vegetation would likely recover within a few years depending upon rainfall and the degree of trampling. In addition, gather sites and temporary corrals are selected to enable easy access by transport vehicles and

logistical support equipment. Normally, these sites are located near or on roads, pullouts, or other flat areas, which have been previously disturbed. These common practices would minimize the short-and long-term effects of these impacts to vegetation. However, it should be noted that horses trample vegetation in other areas, especially in riparian areas and nearby upland habitats, and that such effects become more extensive the greater the number of animals present on the Installation.

With respect to other animal species—again, both special status and non-special status species—the likelihood of gather activities having impacts to such biological resources is low, as locations chosen for such activities are selected to be in areas without many high value resources (i.e., roads and previously disturbed areas). However, many terrestrial and ground-dwelling species are currently adversely affected by the presence of horses and burros. Horses and burros can trample individuals either on the ground or in burrows. Horse and burro movement also damages plants that may be used by wildlife species for forage, shelter, or nesting locations. Additionally, horses and burros spend a disproportionately high amount of time at water resources (U.S. Navy 2013c). The water resources at NAWSCL provide riparian and nearby upland habitats, both of which are scarce on the Installation. A reduction in wild horse and burro numbers would benefit species dependent upon these resources. Achieving an AML for horses and/or reaching a burro population of zero would reduce inter-species competition for forage and water resources, thus benefiting wildlife populations and the remaining horses. Springs and riparian areas, particularly in towhee habitat, are being fenced to preclude access by horses and burros while allowing access by native species. Water for horses and burros at these sites is provided by allowing for continuation of water flow outside the exclosure fencing as needed. (The DoN notes, however, that only a portion of the overall number of springs and riparian areas on NAWSCL as a whole are or would be fenced.)

The horse population does not have direct effects on the Mohave tui chub or desert tortoise, as the range for wild horse populations does not overlap with either species. However burro populations at the Installation do overlap with that of desert tortoise. A decrease in burro numbers would benefit desert tortoise by reducing habitat degradation and the possibility of trampling, and by lowering the competition for food resources. Similarly, the Inyo California towhee would specifically benefit from a reduction in impacts associated with both lower horse and burro numbers. Wild horses and burros inflict extensive damage to riparian and upland habitat at NAWSCL, some of which is in critical habitat for Inyo California towhee. A reduction in their numbers would continue to aid in the recovery of Inyo California towhees and their habitat.

The same springs and seeps associated with biological resources damage from over-populations of horses and burros also tend to support the highest density and diversity of prehistoric cultural resources (U.S. Navy 2013c). As with the biological resources discussed above, cultural properties associated with springs and riparian areas would be protected through installation of new feral animal exclosure fencing and upkeep of existing fencing around these resources. Impacts to cultural resources that may occur at horse and burro capture sites (including vehicle staging areas and run traps) are avoided by ensuring that cultural resource personnel survey the proposed use areas for potential impacts to historic properties prior to use. In cases where the traps would be located in or near historic properties an archaeologist would be on-site during gather activities to ensure that the proposed gather does not adversely affect elements that contribute to the eligibility of the cultural property or accidently impact surrounding sites.

The INRMP update has the objective of achieving and maintaining the Herd to fewer than 168 animals. The AML is considered to be the number of horses that NAWSCL lands can successfully sustain without long-term impacts to its natural resources. The INRMP and the WHBMP include horse roundups as a management strategy to reduce the numbers of horses, and both seek a zero population of burros. The INRMP update also provides for the use of other management strategies to reach the AML for the wild horse population.

Continuation of current horse and burro management practices would have beneficial effects on vegetation, biological resources, and hydrology and water quality. However, given the use of contraception as described in the INRMP update, it is much more likely that the AML would ultimately be achieved for wild horses—or would be achieved much sooner and more predictably—now that the INRMP update has been implemented. Accordingly, with in light of the implementation of the INRMP update (with its WHBMP), it is anticipated that beneficial impacts to these resource areas would be further enhanced.

Most notably, it is anticipated that the number of horses at NAWSCL would be dramatically reduced through the combination of removals and fertility control under the updated management guidelines. This lower number would allow the populations to avoid boom and bust cycles that would otherwise occur. Horses would be healthier and better able to survive stressful periods, such as prolonged droughts and harsh winters. This smaller population would be more sustainable. The INRMP update also calls for NAWSCL to implement Herd monitoring measures to assess and ensure that the genetic viability and diversity of the Herd is maintained. Blood and hair samples would be collected for genetic testing. The WHBMP would implement genetic testing every 10 to 15 years and more frequently if there is a recognized concern regarding low genetic diversity (U.S. Navy 2013c). Achieving the AML of 100–168 horses would keep the Herd at an effective genetic population size, which is commonly recognized as 50 breeding pairs. Genetic diversity is currently low but not critical. Additionally, NAWSCL would record the total number of adults and foals, along with each animal's body condition, sex, and age to better monitor the Herd. Thus the implementation of the WHBMP would reduce the size of the Herd, therefore providing benefits to species currently impacted by their presence on the Installation. Additionally, the Herd, once down to an AML, would become more sustainable, would be less affected by extreme environmental conditions, would have a regularly monitored genetic composition, and would be more easily monitored for health condition and herd composition.

Indirect impacts of the updated INRMP's management strategies would be realized through a reduction of current horse populations. In areas where wild horse and burro populations overlap with rare plant populations, a reduction in the wild horse and burro populations would reduce the impacts from trampling, grazing, and foraging on special status plant populations. Competition for forage among wild horses, burros, and wildlife would be reduced as utilization levels decrease, allowing for the recovery of healthier vegetation communities. The updated INRMP's management strategies would help reduce the impact that wild horses and burros have on the vegetation found at water sources on NAWSCL. This vegetation is essential in continuing the hydrologic function of water resources and helps ensures water retention. Additional damage is inflicted on these sensitive resources through the disturbance of soils in the surrounding areas, the establishment of trails leading to water resources, and through the degradation of water quality due to wild horses and burros fouling the water. The updated INRMP's management strategies would reduce soil erosion and compaction associated with the movement of hooved animals (outside of the impacts induced by horse gathers). Fewer horses and burros would help to maintain the soil and the geologic function of native ecosystems as a reduction in their numbers would reduce the damage their movement and foraging has on soils. A reduction in horses and burros across the Installation would benefit soils.

Other Federally Protected Wildlife Species. A small number of the MBTA-covered species known to occur on NAWSCL are afforded further/greater protection under either the ESA or the Bald and Golden Eagle Protection Act, and impacts to those species are discussed separately. The other MBTA-covered species that occur on NAWSCL are also known from suitable habitats in the vicinity of Ridgecrest, as well as within the general region (e.g., burrowing owl, LeConte's thrasher), or are associated with habitats of limited distribution on NAWSCL, such as riparian areas (e.g., vermillion flycatcher, yellow-breasted chat), or have large territory requirements (e.g., golden eagle). While there is some potential for these species to be affected by ongoing test and training operations at these sites, the likelihood of significantly affecting

any MBTA-species is low. Therefore, continuation of the current use of target and test sites would likely have a correspondingly low impact on these species.

As previously discussed, wild fires are sometimes started by range activities on NAWSCL. When a military-related wild fire does occur, vegetation supporting MBTA-covered species could be consumed by the fire. Fire management is discussed at the end of this section (Section 4.4.2.1).

Non-Special Status Wildlife and Plant Species. Various non-special status wildlife and plant species have been documented as occurring on NAWSCL. The documentation primarily exists as observations associated with project-specific natural resource surveys, research studies conducted by academia and/or resource agencies, and supplemental anecdotal observations. Some of these non-sensitive wildlife and plant species occur on NAWSCL in the various desert scrub and riparian habitats that are associated with regulated and otherwise protected species such as the desert tortoise and Inyo California towhee, and other sensitive wildlife and plant species. As such, the resource management measures enacted by NAWSCL to protect special status species would also concurrently afford protection of non-special status species. The analyses of impacts associated with the various special status species on NAWSCL are therefore similar to what is expected for non-special status species, with potential impacts from noise, wild fire, and other military-related impacts considered not significant to non-special status species.

EOD Training. EOD training is restricted to the EOD Training Facility, and the Joint Counter IED Facility (JCIF) in Darwin Wash. The 2-week training classes are expected to increase in frequency by up to 25 percent (38 total annual classes). Since EOD training activities would continue to occur within established areas and the existing resource management measures outlined in the CLUMP and INRMP would continue to be applied, the increased tempo at the training facility would not result in any significant effect to any managed wildlife or plant species, any NAWSCL special status species, or any non-sensitive wildlife or plant species on NAWSCL.

Ground Troop Training. GTT is a routine component of NAWSCL test and training activities (see Section 2.3.1.2, Range Ground Events, for description of GTT activities). Potential effects of continued GTT on federally protected species at NAWSCL and NAWSCL special status species, as well as non-special status wildlife and plant species, are discussed below. GTT activities would be managed according to the established standard operating procedure identified in Section 2.1.

Mohave Tui Chub. Mohave tui chub habitat is not located near approved GTT areas. Although there are no known training exercises that require GTT activity in aquatic environments, if such a need arises, the training exercise would be coordinated with NAWSCL environmental staff to avoid exercises in and adjacent to known tui chub populations. Therefore, the continuation of current and proposed GTT activities would have no significant impact on the Mohave tui chub or its habitat.

Desert Tortoise. GTT activities are expected to expand by up to 25 percent. GTT activities would continue to be restricted to approved areas (see Section 2.3.1.2 Range Ground Events) throughout the NAWSCL ranges. GTT activities would continue to be conducted within designated desert tortoise critical habitat in Superior Valley Tactical Training Range, on the east and west sides of Superior Valley. While GTT activities have some potential to affect desert tortoise and its habitat, existing management practices (as defined in the CLUMP and INRMP) are applied to keep larger GTT events limited to approved areas, and environmental awareness briefings are mandatory. NAWSCL initiated the Section 7 consultation for these actions and a BO (8-8-12-F-29) was issued on February 19, 2013 (see Appendix J). Therefore, no significant impacts to desert tortoise from the continuation of current GTT activities are anticipated.

Southwestern Willow Flycatcher and Least Bell's vireo. The riparian areas on NAWSCL represent potentially suitable habitat for the southwestern willow flycatcher and the least Bell's vireo. If any GTT

activities are required in riparian areas, NAWSCL would coordinate ground-disturbing activities away from riparian habitat during the breeding season, and would assess any activities that could impact riparian habitat within the range of the species on the Installation. Therefore, any ground-disturbing activities conducted in potential southwestern willow flycatcher or least Bell's vireo habitat associated with the Proposed Action would be assessed on an individual basis, to include potential development of impact avoidance and/or minimization measures. Therefore, it is likely that there would be no significant impacts to the southwestern willow flycatcher or the least Bell's vireo from the 25 percent increase in GTT activities.

Inyo California Towhee. NAWSCL would continue to implement the towhee Cooperative Management Agreement between the Installation, USFWS, BLM, and CDFG (known as California Department of Fish and Wildlife). Per the Cooperative Management Agreement, NAWSCL would continue to coordinate ground-disturbing activities away from towhee habitat, and would assess any activities that could impact riparian habitat within the range of the species on the Installation. Activities that may affect the Inyo California towhee would also require initiation of consultation with USFWS. Therefore, any ground-disturbing activities conducted in Inyo California towhee habitat associated with the Proposed Action would be assessed on an individual basis, to include potential development of impact avoidance and/or minimization measures. Therefore, it is likely that there would be no significant impacts to Inyo California towhee from the 25 percent increase in GTT activities.

NAWSCL Special Status Plant and Wildlife Species. Known NAWSCL special status plant species are found in areas that are used for GTT. GTT activities would continue to be restricted to approved areas (see Section 2.3.1.2 Range Ground Events) throughout the NAWSCL ranges. Since most GTT activities are short term (approximately 1 day of use on 2,450 acres [991 hectares]), involve a small number of foot soldiers, and are widely dispersed throughout the NAWSCL ranges, the likelihood of these activities impacting substantial numbers of NAWSCL special status plants is very low. There is a potential for GTT activities to impact NAWSCL special status wildlife species, by causing the collapse of occupied burrows or temporary disruption of avian foraging or nesting behaviors. However, NAWSCL special status species would continue to be managed by implementation of existing land use protocols, would continue to be given appropriate consideration during project planning efforts, and since impact avoidance and minimization measures would continue to be implemented to the extent practicable, impacts to these species should remain less than significant. Therefore, no significant impacts from the 25 percent increase of GTT events on NAWSCL special status plant species would be anticipated.

Known NAWSCL special status wildlife species are found in areas that are used for GTT. Since the majority of GTT activities are short-term (approximately 1 day of use on 2,450 acres [991 hectares]), involve a small number of foot soldiers, and are widely dispersed throughout the NAWSCL ranges, the likelihood of these activities impacting substantial numbers of NAWSCL special status wildlife species is very low. Additionally, NAWSCL special status species would continue to be managed by implementation of existing land use protocols, would continue to be given appropriate consideration during project planning efforts, and since impact avoidance and minimization measures would continue to be implemented to the extent practicable, impacts to these species should remain less than significant. Therefore, no significant impacts from the Proposed Action GTT activities on NAWSCL special status wildlife species would be anticipated.

Changes in RDAT&E and training tempos may result in additional but less than significant impacts to special status species. Any as yet unidentified requirements that may result in changes in RDAT&E and training footprints would be addressed on a case-by-case basis with biological surveys conducted to ensure the activities comply with the 2013 BO (8-8-12-F-29).

Wild Horses and Burros. While there is some potential for wild horses and burros to be within areas utilized for GTT activities, such trainings are typically conducted in a manner that would not result in the injury or death of a wild horse or burro. Therefore, GTT activities are not expected to significantly affect wild horses or burros.

Other Federally Protected Wildlife Species. GTT activities would not be expected to adversely affect the ability of any MBTA-covered species to maintain stable populations within the northwestern Mojave Desert. Changes in RDAT&E and training tempos may result in additional but less than significant impacts to special status species. Any as yet unidentified requirements that may result in changes in RDAT&E and training footprints would be addressed on a case-by-case basis with biological surveys conducted to determine species presence/absence. Therefore, the Proposed Action would not result in any significant impacts to MBTA-covered species in association with GTT.

Non-Special Status Wildlife and Plant Species. Various non-special status wildlife and plant species have been documented as occurring on NAWSCL. The documentation primarily exists as observations associated with project-specific natural resource surveys, research studies conducted by academia and/or resource agencies, and supplemental anecdotal observations. These general, non-sensitive wildlife and plant species occur on NAWSCL in the various desert scrub and riparian habitats that are associated with regulated and otherwise protected species such as the desert tortoise and Inyo California towhee, and other sensitive wildlife and plant species. As such, the resource management measures enacted by NAWSCL to protect special status species would also concurrently afford protection of non-special status species. The analyses of impacts associated with the various special status species on NAWSCL are therefore similar to what is expected for non-special status species, with potential impacts from noise, wild fire, and other military-related impacts considered not significant to non-special status species.

Directed Energy Events

DE activities on NAWSCL include testing of HEL and HPM systems. HEL and HPM testing would include air-to-air, air-to-ground, surface-to-air, surface-to-surface, and electromagnetic scenarios as well as static tests. Multiple concurrent DE events could occur on a daily basis across NAWSCL. For the purpose of this EIS/LEIS, engagement areas represent areas where DE would maneuver and operate. Focused electromagnetic (EM) areas represent areas where DE system targets are located or HEL and/or HPM beams could exceed power levels for uncontrolled environments (see Section 3.10.8.1 for a description of controlled and uncontrolled environments). Focused EM areas, which could include EM source systems (the shooter), the system under test, and associated test instrumentation, would be located on existing target and test areas, travel surfaces (e.g., roads, turnouts), and instrumentation sites.

Air-to-air and air-to-ground DE system activities would feasibly include engagement areas anywhere on the North and South Ranges. Surface-to-surface and surface-to-air DE activities would originate from focused EM areas. Focused EM areas would include portions of Coso North and South, Cactus Flats, Coles Flat, Darwin Wash, Junction Ranch, Baker, Airport Lake, Charlie, SNORT, George, Armitage Field, Propulsion Laboratories, Ordnance T&E, Mojave B North, and Randsburg Wash. The NAWCWD Operation Requirements Document (ORD) groups DE activities together in a broader category of EM activities. The description of EM activities in the ORD represents a superset that includes DE.

Some types of equipment/facilities common to DE testing include control shelters, personal protective equipment, atmosphere and beam profiling equipment, and use of large electrical generators. HEL and HPM safety protocols are in place to mitigate risk and prevent potential mishaps. Regulations and national standards for human health and safety are used for protection of natural resources, as there are no existing standards regulating exposure to biological resources. NAWCWD would conduct DE activities in accordance with existing Range Safety procedures and national standards, such as the American

National Standards Institute (ANSI)/Institute of Electrical and Electronics Engineers (IEEE) C95.1*, Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,* to mitigate the potential effects to human health and the environment. Existing Range safety procedures are driven by NAVSEA OP3565/NAVAIR 16-1-529, *Electromagnetic Radiation Hazards*, which was derived from ANSI/IEEE C95.1.

Air-to-air and air-to-ground testing over the playa lakes on NAWSCL would occasionally result in a relatively small amount of debris scatter onto the surface of the playas where such testing typically occurs. Although these playa lakes support giant fairy shrimp, a NAWSCL special status species, the overall impact to the species from sparse and occasional debris scatter is negligible, relative to the overall health of the population of the giant fairy shrimp and the playa ecosystem. Therefore, air-to-air and air-to-ground test events have a low impact on biological resources within playas.

High Energy Laser Events. Each proposed test of, or training use of a HEL system would follow the protocols of OPNAVINST 5100.27B, *Navy Laser Hazards Control Program*. As such, the DoN would require as standard procedure that no persons, wildlife, reflective surfaces, or non-target obstructions of any sort are present within the hazard area between the laser and the target. Safety procedures and control measures provided in MIL-HDBK-828B, *Range Laser Safety*, ensure that the laser cannot be fired until it is locked onto the target. Section 3.10.10 provides greater detail regarding these control measures. While possible, the likelihood that a bird or other undetected animal could move into the path of the beam as the laser is triggered is considered remote.

Potential effects on federally protected species and NAWSCL special status species from the increased testing of HEL weapons under the Proposed Action are discussed below.

Mohave Tui Chub. HEL weapons activities at target and test sites under the Proposed Action would not affect Mohave tui chub, since its habitat is located away from military activities.

Desert Tortoise. The desert tortoise and its habitat on NAWSCL were described above in the discussion of range ground events. Because most of the test and target sites are outside the desert tortoise habitat, desert tortoise is not expected to nest, burrow, or forage within the majority of the target and test areas. However desert tortoise could occasionally transit through these areas, particularly where tortoise habitat is immediately adjacent to many of the smaller target areas.

The likelihood of an HEL weapon hitting an individual desert tortoise is extremely low, as testing and safety protocols have been established to minimize such occurrences. NAWCWD activities must comply with OPNAVINST 5100.27B, *Navy Laser Hazards Control Program* and must be approved by the NAWCWD Range Laser System Safety Officer (RLSSO). The DoN instruction incorporates the industry standard, ANSI Z136.1, *Safe Use of Lasers*, into its requirements. In addition to OPNAVINST 5100.27B, NAWCWD implements a detailed Risk Hazard Assessment (RHA)/SOP process prior to the use of laser systems on the ranges. Safety protocols are previously described in Section 3.10.10. Prior to initiating HEL test activities, visual inspection of the target area would be conducted by personnel according to safety SOPs and requirements concurrent with inspections for humans. Should desert tortoises be observed during pre-safety checks, they would be removed by range personnel and environmental staff would be contacted within 24 hours.

Reflected laser energy from HEL activities may retain enough energy to potentially cause vision and/or skin damage, should a laser reflect off of a mirror-like (or specular) object. Such objects are not allowed in areas where laser operations are conducted. Pre-test screens are performed to identify and remove any potential specular surfaces resulting as debris from previous RDAT&E activities, in accordance with MIL-HDBK-828B.

In rare instances, HEL tests may result in fire or explosion due to the rapid heating of objects from a focused beam. Fire management is discussed at the end of this section (Section 4.4.2.1).

Implementation of the measures described above would ensure that HEL activities would likely have no effect on the desert tortoise population of NAWSCL. Therefore, no significant impacts to desert tortoise are expected from the proposed HEL activities.

Southwestern Willow Flycatcher and Least Bell's Vireo. Under the Proposed Action, HEL weapons tests would not affect habitat potentially suitable for the southwestern willow flycatcher and the least Bell's vireo because target and test sites are not located within riparian habitat. Therefore, no significant impacts to either of these species are expected from the proposed HEL activities.

Inyo California Towhee. Under the Proposed Action, HEL weapons tests would not affect Inyo California towhee habitat because target and test sites are not located within Inyo California towhee habitat. Therefore, no significant impacts to Inyo California towhee are expected from the proposed HEL activities.

NAWSCL Special Status Plant and Wildlife Species. NAWSCL special status plant species have been identified in two target areas at NAWSCL that are associated with HEL activities under the Proposed Action: the Coso Range in the Coso LMU, and the Coles Flat targets in the Coles Flat LMU. The Darwin milk-vetch, pinyon rock cress, desert bird's beak, and a plant tentatively identified as Panamint mariposa lily are known to occur throughout the Coso Range.

The likelihood of significantly affecting any NAWSCL special status plant species is very low. Additionally, NAWSCL special status species would continue to be managed by implementation of existing land use protocols, would continue to be given appropriate consideration during project planning efforts, and since impact avoidance and minimization measures would continue to be implemented to the extent practicable, impacts to these plant species should remain less than significant. Therefore, the increased HEL weapons testing under the Proposed Action would not have a significant impact on NAWSCL special status plant species.

Based on the potentially broad applicability of HEL activities, a wide variety of NAWSCL special status wildlife species are known to occur within and adjacent to areas where HEL weapons could be deployed at target or test site areas. There is a potential for HEL activities to impact NAWSCL special status wildlife species, by either causing blindness, or burning. The likelihood of significantly affecting any NAWSCL special status species is very low. Therefore, the increased HEL weapons testing under the Proposed Action would not have a significant impact on NAWSCL special status wildlife species.

Wild Horses and Burros. The NAWCWD ORD outlines a broad use of test and target areas that may potentially host EM activities (including HEL events) on NAWSCL. Based on the potentially broad applicability of HEL activities, wild horses and burros are known to occur within and adjacent to areas where HEL weapons could be deployed at target or test site areas. There is a potential for HEL activities to impact wild horses and burros, by either causing blindness, or burning. However, given the number of wild horses and burros on-installation and frequency of HEL activities, the likelihood of significantly affecting any wild horses or burros is very low. Therefore, the increased HEL weapons testing under the Proposed Action would not have a significant impact on wild horses and burros on NAWSCL.

Other Federally Protected Wildlife Species. The NAWCWD ORD outlines a broad use of test and target areas that may potentially host EM activities (including HEL events) on NAWSCL. Based on the potentially broad applicability of HEL activities, a wide variety of other federally protected wildlife species (e.g., migratory birds) are known to occur within and adjacent to areas where HEL weapons could be

deployed at target or test site areas. There is a potential for HEL activities to impact wildlife species, by either causing blindness, or burning. The likelihood of significantly affecting any special status species is very low. Therefore, the increased HEL weapons testing under the Proposed Action would not have a significant impact on other federally protected wildlife species.

Non-Special Status Wildlife and Plant Species. Non-special status wildlife and plant species occur on NAWSCL in the various desert scrub and riparian habitats that are associated with regulated and otherwise protected species such as the desert tortoise and Inyo California towhee, and other sensitive wildlife and plant species. As such, the resource management measures enacted by NAWSCL to protect special status species would also concurrently afford protection of non-special status species. The analyses of impacts associated with the various special status species on NAWSCL are therefore similar to what is expected for non-special status species, with potential impacts from noise, wild fire, and other military-related impacts considered not significant to non-special status species.

High-Power Microwave Use. Non-lethal antipersonnel HPM systems operate at relatively high frequency (approximately 100 GHz). At this frequency, the microwave energy will penetrate 1/64 inch of human skin. These weapons can be operated as continuous wave or pulsed wave systems and emit radiation that is absorbed by the target's skin, causing rapid heating and pain. These systems have little effect on electronics. Non-lethal antipersonnel HPM systems tests on human subjects resulted in skin burns (caused by induced electrical currents rather than water-bond excitation) in less than one-tenth of one percent of test subjects (8 in over 11,000 exposures) (LeVine 2009). There is a low probability that biological resources could be affected (i.e., burned or otherwise injured).

Counter-electronics HPM systems operate at lower frequencies (<10 GHz). These systems operate in short pulses (usually <1 µsec), with low average power. At low power, counter-electronics HPM systems can disrupt target systems. Higher power counter-electronics HPM systems can effectively damage electronic systems. Counter-electronics HPM systems have little to no effect on biological systems.

Potential impacts on wildlife species would be minimized by implementing control techniques to monitor the width of the HPM beam and engineered controls to ensure the HPM systems are focused on the intended target. Human health and safety standards for EM activities are provided in ANSI/IEEE C95.1, *IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,* and NAVSEA OP3565/NAVAIR 16-1-529, *Electromagnetic Radiation Hazards*. Each proposed test of, or training use of, an HPM system would follow the protocols of human health and safety standards as provided in:

- ANSI/IEEE C95.1, IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kilohertz (kHz) to 300 GHz;
- DoD Instruction 6055.11, Protecting Personnel from Electromagnetic Fields; and
- NAVSEA OP3565/NAVAIR 16-1-529, Electromagnetic Radiation Hazards.

Section 3.10.8 provides a summary of the controls and procedures that must be implemented during HPM systems operation. Potential effects on federally protected species and NAWSCL special status species at NAWSCL from the increased testing of HPM weapons at NAWSCL under the Proposed Action are discussed below.

Mohave Tui Chub. The expansion of current HPM activities at target and test sites under the Proposed Action would have no effect on Mohave tui chub populations at NAWSCL, since its habitat is located away from military activities.

Desert Tortoise. The desert tortoise and its habitat on NAWSCL were described above in the discussion of range ground events. Because most of the test and target sites are outside the desert tortoise habitat, desert tortoise is not expected to nest, burrow, or forage within the majority of the target and test areas. However, desert tortoise could occasionally transit through these areas, particularly where tortoise habitat is immediately adjacent to many of the smaller target areas. The likelihood of an HPM weapons test discharge hitting an individual desert tortoise within the buffer zone is extremely low, as testing and safety protocols have been established to minimize the target impact area. Each proposed test of, or training use of, an HPM system would follow the protocols provided in:

- ANSI/IEEE C95.1, IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz;
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) Publication-1998, ICNIRP Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (Up to 300 GHz);
- MIL-STD-464C, Electromagnetic Environmental Effects Requirements for Systems; and
- DoD Instruction 6055.11, *Protecting Personnel from Electromagnetic Fields*. Section 3.10.8 provides a summary of the controls and procedures that must be implemented during HPM system operation.

Prior to initiating HPM test activities, visual inspection of the target area would be conducted by operations personnel according to safety SOPs and requirements concurrent with inspections for humans. Should desert tortoises be observed during pre-safety checks, they would be removed by range personnel and environmental staff would be contacted within 24 hours.

The risk of HPM ignition of wild fires is considered very low and such wild fires therefore would be possible but not likely to occur. Implementation of the measures described above would ensure that HPM activities would likely have no effect to the desert tortoise population of NAWSCL. Therefore, no significant impacts to desert tortoise are expected from the proposed HPM activities.

Southwestern Willow Flycatcher and Least Bell's Vireo. Under the Proposed Action, HPM tests would not occur within habitat potentially suitable for the southwestern willow flycatcher and the least Bell's vireo. Therefore, no significant impacts to either of these species are expected from the proposed HPM activities.

Inyo California Towhee. The proposed HPM tests would not be conducted in Inyo California towhee habitat and would thus not affect Inyo California towhee populations or their habitat. Therefore, no significant impacts to Inyo California towhee are expected from the proposed HPM activities.

NAWSCL Special Status Plant and Wildlife Species. Considering the risk of HPM ignition of wild fires is considered very low and such wild fires therefore would be possible but not likely to occur. Considering this, no significant impacts to NAWSCL special status plant or wildlife species are expected from the proposed HPM activities. Additionally, NAWSCL special status species would continue to be managed by implementation of existing land use protocols, would continue to be given appropriate consideration during project planning efforts, and since impact avoidance and minimization measures would continue to be implemented to the extent practicable, impacts to these species should remain less than significant.

Wild Horses and Burros. The NAWCWD ORD outlines a broad use of test and target areas that may potentially host EM activities (including HPM events) on NAWSCL. Based on the potentially broad applicability of HPM activities, wild horses and burros are known to occur within and adjacent to areas where HPM weapons could be deployed at target or test site areas. There is a potential for HPM activities

to impact wild horses and burros, by possibly causing burning. However, given the number of wild horses and burros on-installation and frequency of HPM activities, the likelihood of significantly affecting any wild horses or burros is very low. Therefore, the increased HPM weapons testing under the Proposed Action would not have a significant impact on wild horses and burros on NAWSCL.

Other Federally Protected Wildlife Species. The NAWCWD ORD outlines a broad use of test and target areas that may potentially host EM activities (including HPM events) on NAWSCL. Based on the potentially broad applicability of HPM activities, a wide variety of MBTA-covered species are known to occur within and adjacent to areas where HPM weapons could be deployed at target or test site areas. While there is some potential for an individual animal to be affected by ongoing HPM use at these sites, the likelihood of significantly affecting any MBTA-covered species is very low, and would not be expected to affect the regional population viability of these species. Therefore, the increased HPM weapons testing under the Proposed Action would not have a significant impact on MBTA-covered species.

Munitions Expenditures

Munitions expenditures would include the following:

- Bombing activities within the North Range, Echo Range, and Superior Valley;
- Expenditure of gun munitions within the North Range, Echo Range, and Superior Valley;
- Expenditure of gun munitions within Darwin Wash (North Range) would increase by up to 658,560 to a total of approximately 3,292,800 expenditures annually;
- Use of rockets and missiles within the North and South Ranges; and
- Use of other munitions items such as flares and chaff within the North Range, Echo Range, and Superior Valley.

Mohave Tui Chub. Under the Proposed Action, increased munitions expenditures at target and test sites would not affect Mohave tui chub, since its habitat is located away from military activities.

Desert Tortoise. Desert tortoise and its habitat on NAWSCL were described above in the discussion of range ground events. Because some target and test sites have not been cleared, routine maintenance for vegetation clearance is not conducted at some sites, and some sites have revegetated, desert tortoise has the potential to occur within target and test areas.

Field surveys conducted in 1998 concluded that impacts outside of the designated buffer zones were infrequent (Tetra Tech 1999), and that additional impacts are unlikely. The likelihood of a munitions expenditure impacting an individual desert tortoise transiting the area or in its burrow in the buffer zone is low. Since desert tortoise and burrow density on the North Range and in most portions of the South Range are low, impacts to desert tortoise are not expected to be significant. There is a potential that munitions expenditures could result in wild fires and this is discussed in the Fire Management subsection at the end of this section (Section 4.4.2.1).

NAWSCL would continue to conduct test and training activities in accordance with the 2013 BO (8-8-12-F-29). Therefore, no significant impacts to desert tortoise from munitions expenditures are anticipated.

Southwestern Willow Flycatcher and Least Bell's Vireo. The willow flycatcher and the least Bell's vireo have been noted on NAWSCL as migrants. The southwestern willow flycatcher migration in California typically occurs in spring and fall, with nesting from April through the end of August. The vireo typically arrives in Southern California toward the end of March, before migrating out of the region in September, although some individuals may overwinter. The riparian areas represent potentially suitable habitat for the

southwestern willow flycatcher and the least Bell's vireo. No target or test sites are located within riparian habitat potentially suitable for either the southwestern willow flycatcher or the least Bell's vireo, and therefore the majority of potential activities associated with munitions expenditures would not impact either species. However, wild fires associated with range activities can occur and are discussed in the Fire Management subsection at the end of this section (Section 4.4.2.1).

Inyo California Towhee. Under the Proposed Action, munitions expenditures would not affect Inyo California towhee habitat because target and test sites are not located within towhee habitat. As discussed above, NAWSCL has a Cooperative Management Agreement with USFWS for the management of the Inyo California towhee. The Cooperative Management Agreement outlines a series of conservation measures that NAWSCL would continue to implement for the benefit of the species. These measures include the consideration and avoidance (to the maximum extent possible) of potential impacts during project planning efforts, removal of feral burros and horses from the Inyo California towhee's range, fencing of springs and riparian tracts within towhee habitat, removal of invasive plants, and towhee population monitoring within the limits of NAWSCL. In addition, NAWSCL would conduct test, training and facility activities in accordance with the 2013 BO (8-8-12-F-29) issued on February 19, 2013 (Appendix J). Therefore, no significant impacts to the Inyo California towhee from munitions expenditures are anticipated. However, there is a potential that munitions expenditures could result in wild fires and this is discussed in the Fire Management subsection at the end of this section (Section 4.4.2.1).

NAWSCL Special Status Plant and Wildlife Species. The potential impacts to plant species from munitions would be similar to other mission impacts discussed previously.

Various NAWSCL special status wildlife species have been documented as occurring within some of the disturbance footprints at target or test site areas associated with the Proposed Action, such as Mohave ground squirrel, prairie falcon, and LeConte's thrasher. Invertebrate species such as Jerusalem crickets, dune cockroaches, dune weevils, giant fairy shrimp, and mammals such as the Argus Mountain kangaroo rat, may occur within the primary buffer zones of the target and test sites. NAWSCL special status species would continue to be managed by implementation of existing land use protocols, would continue to be given appropriate consideration during project planning efforts, and since impact avoidance and minimization measures would continue to be implemented to the extent practicable, therefore, the increased munitions expenditures under the Proposed Action would not have a significant impact on NAWSCL special status wildlife species.

Munitions expenditures at the playa lakes on NAWSCL would include the occasional use of surface-to-surface rockets, missiles, and bombs. Testing and training does not occur on the playa lakes, unless the playas are dry. When use of munitions does occur on the playa lakes, impacts are limited to the general impact and detonation area associated with the use of munitions. The occasional use of munitions at playa lakes, such as China Lake, is negligible, relative to the overall health of the population of the giant fairy shrimp and the playa ecosystem. Therefore, munitions use on NAWSCL has a low impact on biological resources within playas.

Wild Horses and Burros. The majority of the wild horses and burros on NAWSCL are located in the higher elevations of the Coso and Argus Mountains on the North Range. There is a potential for munitions expenditures to occur in areas where wild horses and burros occur. However, NAWSCL has implemented feral horse and burro management strategies in the INRMP to manage and maintain the wild horse and burro populations in a humane manner. While there is a potential for wild horses and burros to occur in areas where munitions expenditures can occur, the likelihood of significantly affecting any wild horses or burros is very low, and would not result in a significant impact on the resource.

Other Federally Protected Wildlife Species. A small number of the MBTA-covered species known to occur on NAWSCL are afforded greater protection under the ESA, and impacts to those species are discussed separately. The other MBTA-covered species that occur on NAWSCL are also known from suitable habitats in the vicinity of Ridgecrest, as well as within the general region (e.g., burrowing owl, LeConte's thrasher, etc.), or are associated with habitats of limited distribution on NAWSCL, such as riparian areas (e.g., vermillion flycatcher, yellow-breasted chat, etc.), or have large territory requirements (e.g., golden eagle). While there is some potential for these species to be affected by ongoing munitions use at these sites, the likelihood of significantly affecting any population of MBTA-species is low.

As previously discussed, wild fires associated with test and training munitions activities on NAWSCL can occur. When a military-related wild fire does occur, vegetation supporting MBTA-covered species could be consumed by the fire. Fire management is discussed at the end of this section (Section 4.4.2.1).

Energetic Material Expenditures

Energetic material expenditures would occur on the North Range and South Range. Energetic material expenditures would include use of C-4, detasheet 0.125, detonation cord, dynamite, exrod, gun powder, high explosives (not otherwise classed under energetic material expenditures), satchel charge C-4, smoke grenades, squibs/initiators, trinitrotoluene (TNT), and propellant.

Mohave Tui Chub. Energetic material expenditures at target and test sites under the Proposed Action would not affect Mohave tui chub, since its habitat is located away from military activities.

Desert Tortoise. Desert tortoise and its habitat on NAWSCL were described above in the discussion of range ground events. Because some target and test sites have not been cleared, routine maintenance for vegetation clearance is not conducted at some sites, and some sites have revegetated, desert tortoise has the potential to occur in areas where the scrub vegetation has been allowed to recover.

Previous field surveys concluded that impacts outside of the designated buffer zones were infrequent and that additional impacts are unlikely. The likelihood of an energetic material expenditure hitting an individual desert tortoise within the buffer zone is low. Since desert tortoise and burrow density on the North Range and in most portions of the South Range are low, potential impacts to desert tortoise are not expected to be significant.

NAWSCL would continue to conduct energetic material expenditure activities in accordance with existing land and resources management plans and the 2013 BO (8-8-12-F-29) issued on February 19, 2013 for the Proposed Action (Appendix J). However, there is a potential that energetic material expenditures could result in wild fires. Fire management is discussed at the end of this section (Section 4.4.2.1).

Southwestern Willow Flycatcher and Least Bell's Vireo. Under the Proposed Action, energetic material expenditures would not affect habitat potentially suitable for the southwestern willow flycatcher and the least Bell's vireo. However, there is a potential that energetic material expenditures could result in wild fires. Fire management is discussed at the end of this section (Section 4.4.2.1).

Inyo California Towhee. Under the Proposed Action, munitions expenditures would not affect Inyo California towhee habitat, because target and test sites are not located within towhee habitat. However, there is a potential that energetic material expenditures could result in wild fires associated with the use of energetic material. NAWSCL would continue to conduct energetic material expenditure activities in accordance with existing land and resources management plans and the 2013 BO (8-8-12-F-29) issued on February 19, 2013 for the Proposed Action (Appendix J). However, there is a potential that energetic material expenditures could result in wild fires. Fire management is discussed at the end of this section (Section 4.4.2.1).

NAWSCL Special Status Plant and Wildlife Species. The potential impacts to plant species from energetic material expenditures would be similar to other mission impacts discussed previously.

Various NAWSCL special status wildlife species have been documented as occurring within some of the disturbance footprints at target or test site areas associated with the Proposed Action, such as Mohave ground squirrel, prairie falcon, burrowing owl, and LeConte's thrasher. Invertebrate species such as Jerusalem crickets, dune cockroaches, and dune weevils, and mammals such as the Argus Mountain kangaroo rat, may occur within the primary buffer zones of the target and test sites. While there is some potential for an individual animal to be affected by ongoing energetic material use at these sites, the likelihood of significantly affecting any NAWSCL special status species is considered to be low. Additionally, NAWSCL special status species would continue to be managed by implementation of existing land use protocols, would continue to be given appropriate consideration during project planning efforts, and since impact avoidance and minimization measures would continue to be implemented to the extent practicable, the increase in energetic material expenditures under the Proposed Action is not considered to have a significant impact on NAWSCL special status wildlife species.

Energetic expenditures at the playa lakes on NAWSCL would include the occasional use of energetic materials described above. Testing and training does not occur on the playa lakes, unless the playas are dry. When use of energetic materials does occur on the playa lakes, impacts are limited to the general detonation area associated with the use of such materials. The occasional use of energetic materials at playa lakes, such as China Lake, is negligible, relative to the overall health of the population of the giant fairy shrimp and the playa ecosystem. Therefore, munitions use on NAWSCL has a low impact on biological resources within playas.

Wild Horses and Burros. The majority of the wild horses and burros on NAWSCL are located in the higher elevations of the Coso and Argus Mountains on the North Range. There is a potential for energetics material expenditures to occur in areas where wild horses and burros occur. However, NAWSCL has implemented feral horse and burro management strategies in the INRMP to manage and maintain the wild horse and burro populations in a humane manner. While there is a potential for wild horses and burros to occur in areas where energetic material expenditures can occur, the likelihood of significantly affecting any wild horses or burros is very low, and would not result in a significant impact on the resource.

Other Federally Protected Wildlife Species. The MBTA-covered species that occur on NAWSCL are also known from suitable habitats in the vicinity of Ridgecrest, as well as within the general region (e.g., burrowing owl, LeConte's thrasher, etc.), are associated with habitats of limited distribution on NAWSCL, such as riparian areas (e.g., vermillion flycatcher, yellow-breasted chat, etc.), or have large territory requirements (e.g., golden eagle). While there is some potential for these species to be affected by ongoing energetic materials use at these sites, the likelihood of significantly affecting any MBTA-species is low. As previously discussed, wild fires associated with munitions activities on NAWSCL can occur. When a military-related wild fire does occur, vegetation supporting MBTA-covered species could be consumed by the fire. Fire management is discussed at the end of this section (Section 4.4.2.1).

Nonmilitary Uses

Under the Proposed Action, existing Native American, geothermal, research and education, and recreational activities would continue at NAWSCL. Proposed nonmilitary uses falling into these general categories would continue to be considered on a case-by-case basis.

Native American access to the Coso Hot Springs and Prayer Site, pinyon nut harvesting, and visitations to old homesteads would continue at current levels and be conducted in accordance with the existing MOA. Native American traditional practices do not affect federally protected species, critical habitats, or

NAWSCL special status species/habitat. Therefore, continuing current access for Native American activities would have no effect on these biological resources.

Geothermal

The KGRA is located in the Coso Geothermal LMU, which encompasses 153,600 acres (62,160 hectares). Four power plants operate on this land area. No changes to geothermal operations are proposed under the Proposed Action, and no changes would be anticipated with respect to the nature and overall scope of current operations apart from routine and recurring activities (e.g., potential shutting down of existing wells or opening of new wells within approximately the current production area).There are tortoises documented on the eastern portion of the KGRA, with estimated densities ranging from 0 to 5 tortoises per square mile to the east and west of Sugarloaf Mountain (Kiva Biological Consulting and Epsilon Systems Solutions 2004). Therefore, ongoing activities have the potential to impact the tortoise. However, since geothermal operations are not expected to change, impacts to the tortoise are likely to remain very low (potential take due to vehicle access). Federally protected and NAWSCL special status species potentially impacted include Mohave ground squirrel, and burrowing owl. Impacts to these species would be expected to be low, for similar reasons as discussed for the tortoise.

Research and Education

Scientific research conducted at NAWSCL by volunteers and professionals has included vegetation studies, and surveys for rare plants, invertebrates, slender salamanders and other amphibian species, reptiles, chukar, mountain quail, shrews, bats, and small mammals. Because requests for access for research and education activities undergo environmental review prior to approval, potential conflicts with federally protected species, critical habitat, and NAWSCL special status species/habitat are identified and avoided or mitigated to ensure that no significant impacts occur. Research focusing on wildlife species or habitats provides data useful in managing those resources and, thus, would represent a beneficial impact to biological resources management.

Recreation

Camping. Camping may occur on a limited basis in the Argus Range within the existing campsite at Birchum Springs. The camping area is located in an upland Joshua tree woodland zone that is Inyo California towhee habitat. The Birchum Springs camping area was clearly identified by existing facilities, including parking areas and prepared campsites, before being consumed by fire. This camping area was most often used on the weekends by Installation employees for recreation and by contractor field personnel as a convenient overnight location while conducting natural or cultural resources surveys for NAWSCL EMD. Historically, limited recreation activities such as hiking and bird watching have been permitted at this site. However, the site does not currently support camping activities since a range fire consumed the campground area a few years ago. Participants received the Installation's standard environmental awareness briefings developed to prevent impacts to biological resources. Over the years of use, no resource damage or adverse impacts to protected species or habitat have been reported to or observed by NAWSCL staff as a result of camping activities. Re-establishment and use of the site for camping would not adversely affect federally protected species, critical habitats, or NAWSCL special status species/habitats; therefore, potential impacts on biological resources would not be significant.

Golf and Gym Access. Continued public access to the golf course and gymnasium at Mainsite would not affect federally protected species, critical habitats, or NAWSCL special status species/habitats because access to these developed areas is along existing paved roads. In addition, these areas are outside of the boundaries of desert tortoise, Mohave tui chub, and Inyo California towhee habitats. Use of the Installation's gym and golf course facilities would have no effect on federally protected species, critical habitats, or NAWSCL special status species/habitats.

Hiking. Hiking is permitted on existing roads and trails, and is generally performed by personnel with authorized access to North Range areas. The hiking trails on B Mountain are located in areas occupied by desert tortoise and burrowing owl. However, hiking activities are minimally invasive, confined to existing roads and trails, and are not expected to result in any adverse impacts to federally protected species, critical habitat, or NAWSCL special status species/habitat.

Equestrian Use. The area currently used for equestrian activities has been extensively disturbed by developments that were previously located in this area. While the area is near low-density desert tortoise habitat (i.e., 0 to 20 tortoises per square mile), it is also adjacent to rural housing areas. The existing trail, which is on unimproved dirt roadways, is not considered viable desert tortoise habitat. While the likelihood of a desert tortoise being on the trail is fairly remote, equestrians can easily avoid tortoises along the trails. The current use of this area for equestrian activities would not change and no significant impact on biological resources are anticipated.

Off-Road Vehicle Use. ORV use is restricted to two locations on-installation: Mirror Lake (for land-sailing vehicles) and a perpendicular crossing of an existing roadway leading to the South Range, Randsburg Wash Road (for off-road motorcyclists). Land-sailing activities do not occur in desert tortoise habitat and, therefore, have no effect on desert tortoise or its habitat. The playa dry lakebed at Mirror Lake does contain giant fairy shrimp, a NAWSCL special status species (Appendix D). Use of this lakebed could affect the giant fairy shrimp. However, land-sail vehicles are lightweight and have minimal effect on the lakebed surface, which is very hard and not used when wet. Tow vehicles and trailers accessing the lakebed to unload the sail vehicles are heavier, but also have little effect on the dense lakebed surface. Additionally, there is a model airplane use area on Satellite Lake; this activity has little effect on the lakebed surface. Therefore, current ORV use would not change and would have no significant impact on biological resources.

Authorized off-road motorcycle activities are restricted to a limited area of Randsburg Wash Road. Habitat in the area that crosses Randsburg Wash Road is moderately disturbed and is adjacent to a BLM open area where ORV activities are authorized. Although BLM approves specific events that authorize access to this road crossing, the area remains open to unauthorized access. The public routinely accesses the areas along the DoN's umbilical road that connects the North Range and the South Range. The unregulated access likely results in OHV impacts on NAWSCL. While authorized off-road motorcycles could crush desert tortoise that may be in the area, the likelihood of this occurring is considered very low.

Petroglyph Tours. Petroglyph tours are conducted in the Little Petroglyph Canyon area of Coso Range. This general area may contain NAWSCL special status plant species; however, tours are conducted in accordance with established procedures and are supervised by guides trained and certified by NAWSCL personnel. The number of visitors is controlled, visitors are limited to existing roads and trails, and collecting or damaging vegetation or harming wildlife is not allowed. Petroglyph tours provide visitors opportunities to witness the extraordinary environmental resources of the Installation and, thus, represent a beneficial impact.

Bird Watching. The Audubon Society's annual bird counts would continue to be held at Mainsite and George Range. Avian surveys would also continue at the wastewater treatment facility. These activities are permitted throughout areas designated by NAWSCL personnel, and participants are allowed to access these areas via vehicles along established roads. Data gathered during these bird counts are provided to NAWSCL and are used to support management efforts to conserve and protect the Installation's natural resources. Since these activities do not adversely affect federally protected species, critical habitats, or NAWSCL special status species/habitat, and since they serve to generate useful data, bird watching activities are considered a beneficial impact.

Photography. Requests for photographic activities are considered by the Installation's Commanding Officer on a case-by-case basis. Participants of authorized photographic activities are provided appropriate safety, security and environmental briefings. As such, these activities have no effect on federally protected species, critical habitats, or NAWSCL special status species/habitats.

CLUMP Revision and Implementation

Under the Proposed Action (Alternative 1), NAWSCL would revise the 2005 CLUMP and implement the revised CLUMP. The CLUMP incorporates established standard procedures for avoidance and minimization of impacts to environmental resources. By implementing the CLUMP, most projects would be sited in existing disturbed areas, thereby avoiding potential impacts to environmental resources. Potential impacts from a project could potentially be minimized by relocating the project to a previously disturbed area that is sufficiently similar to the area initially proposed for the project, or by reconfiguring the area boundary to avoid a sensitive resource. When new undisturbed areas would be required to support a project, environmental personnel work with project planners and range users to ensure that the project affects the smallest area possible. Potential impacts to undisturbed lands from new or ongoing projects would be further minimized through environmental briefings to range users and range personnel, and by restricting vehicular traffic to established roads. Environmental briefings provide range users and operators with updated information on the types of sensitive resources found on the ranges, specific areas to be avoided, and reporting methods to follow in the event a sensitive resource is inadvertently impacted by an activity. Off-road traffic is permitted only for specific purposes such as munitions or test item recovery and maintenance activities and coordinated with EMD. Impacts to sensitive resources would be further minimized through compliance with the provisions of USFWS BOs, and any additional coordination required, such as agency discussions potentially associated with utilization of the MBTA military readiness waiver. The CLUMP would formalize and integrate the Installation's environmental planning and review processes, and would formalize the standard procedures for impact avoidance and mitigation, which would represent a beneficial impact to biological resources.

Fire Management

An unintended effect of operational test and training activities is the inadvertent ignition of wild fires. In addition to the fire risk from the delivery of munitions and use of other potential ignition sources, NAWSCL has determined that, due to operational requirements, the use of hot spotting charges in Fleet training operations is a mission necessity (see Chapter 2, Table 2-3). Hot spotting charges help aviators and range operations personnel in locating and scoring munitions delivery on targets and the recovery of spent items. However, use of these types of charges is likely to result in at least some level of increase in the frequency of wild fires. Wild fires can result in individual mortality and the loss of habitat. Desert scrub vegetation is slow to fully recover from fire impacts, with loss of species diversity (including shrub species associated with desert tortoise, such as creosote, potentially being depressed for over 20 years following a fire) (Steers and Allen 2011).

As discussed in Section 3.10 Public Health and Safety, RDAT&E and training activities are conducted at NAWSCL in accordance with strict risk assessment and management requirements. These requirements include but are not limited to Range Commanders Council Standard 321-10, *Common Risk Criteria Standards for National Test Ranges* (RCC 2010); NAVSEA OP-5, Volume 1 (NAVSEA 2008a), Marine Corps Order 5104.1C Navy Laser Hazards Control Program; OPNAVINST 5100.27B (U.S. Navy 2008a); Department of Defense Directive 4715.11, *Environmental and Explosives Safety Management on Department of Defense Active and Inactive Ranges*; NAWSINST 8020.15, Range Management Plan; NAVSEA OP3565/NAVAIR 16-1-529 (NAVSEA 2008b), *Electromagnetic Radiation Hazards*, which was derived from ANSI/IEEE C95.1; and NAWSCL Standard Operating Systems. These policies and associated requirements minimize, to the extent practicable, the chance for an accident or mishap that could result in a fire.

Continued implementation of the avoidance and minimization measures associated with the NAWSCL fire management strategy remains a primary management goal of both the INRMP and CLUMP. These measures, outlined in Section 3.4.10 Fire Management, have been developed to ensure mission objectives are achieved, while taking into consideration the protection and conservation of natural resource values. To reduce the effects of fire on natural resources, under the Proposed Action, NAWSCL would establish fire-fighting equipment access roads (which may provide some utility as a fire break) on an as-needed basis, in support of fire suppression capabilities around targets. The DoN would continue to use existing targets, operating areas and the existing road network to determine where additional access roads may be effective to help suppress fires and prevent them from spreading into roadless (including vegetated/habitat) areas. The utility of constructing access roads would be discussed by the Installation's Environmental, Fire and Range Department personnel to determine where the roads would be useful to reduce the risk of fire and/or aid in fire suppression. The DoN would evaluate the benefits of constructing and maintaining access roads (12 feet [3.6 meters] wide) relative to both the economic and environmental cost. The DoN would also attempt to use areas naturally devoid of vegetation, including natural barriers such as washes and lava flows or existing roadways in order to minimize construction and maintenance costs and impacts to native species. The effectiveness of the fire management measures would continue to be reviewed on an ongoing basis by NAWSCL in accordance with the adaptive fire management procedures contained in the 2013 BO (8-8-12-F-29). The measures would be refined as necessary to ensure they remain effective to sustain the Installation's mission, and protect and conserve natural resources.

Due to recent budget cuts China Lake FedFire personnel have been relocated from the South Range to Armitage Airfield on the North Range. Relocation of these personnel increases the FedFire's response time since the fire-fighting personnel and equipment would be responding from the fire station at the airfield. It is expected that the relocation of personnel and equipment will increase response time to Superior Valley from approximately 45 minutes to approximately 2 hours. China Lake FedFire maintains wild fire support agreements with other agencies in the vicinity (including BLM, USFS, and San Bernardino County). China Lake FedFire would continue to maintain its existing mutual aid fire-fighting agreements with other agencies (BLM, USFS, and County of San Bernardino) and continue to pursue the establishment of new mutual aid agreements. The primary asset provided by supporting agencies under these agreements is the deployment of aerial fire-fighting crews and equipment using water-delivering helicopters and aircraft.

The decision to discontinue the use of non-pyrophoric charges, and the removal of fire-fighting personnel from the South Range, may contribute to fire impacts through an increase in the number of fires, or the acreage consumed in a fire. These impacts would be somewhat reduced through implementation of the revised NAWSCL fire management strategy (see Section 3.4.10), including the proposed development of fire breaks and access roads around the perimeter of test site buffers. Potential impacts associated with wild fires on NAWSCL would be addressed for the proposed EOD training expansion as part of the environmental review processes for that effort.

The relative success of any wild fire suppression effort is contingent upon many factors including the location of the fire, fuel loading, weather conditions, distance from fire-fighting assets, timing of fire incident notification, response times for fire-fighting assets, and the accessibility of the terrain where the fire occurs. As such fires are themselves largely unpredictable, and the particular factors present for a given fire are likewise unpredictable, making an overall assessment of impacts associated with such fires is difficult. Because such fires are unpredictable (e.g., crash of an aircraft) the effects cannot be definitively assessed. The DoN would continue to use adaptive fire management measures in accordance with the INRMP and 2013 BO as the management framework to minimize fire related effects. These measures would continue to be reviewed and refined based on lessons learned and the application of the best available scientific knowledge. The DoN's goal is to suppress all fires to minimize fire-related effects

(including but not limited to effects to protected and special status species) while maintaining operational requirements, and the safety of all personnel involved in fire management operations.

This section will address the potential impacts from wild fires resulting from the Proposed Action on key species and resources.

Mohave Tui Chub. Fires caused by RDAT&E and training activities would not likely impact the Mohave tui chub since its habitat is not located near established target and test impact areas.

Desert Tortoise. Wild fires caused by test and training operations pose a potentially significant threat to impact desert tortoise and its associated habitat, including critical habitat. Wild fires on NAWSCL South Range burned approximately 450 acres (182 hectares) of tortoise critical habitat in 2011. Since 1998, a total of 209 fires have burned approximately 1,092 acres (442 hectares) of tortoise critical habitat in the Superior Valley bombing range (see Table 3.4-3).

The fire management measures and safety protocols, implemented by NAWSCL are expected to reduce the effects of uncontrolled wild fires. However, the transition to hot spotting charges on test and training operations conducted at Superior Valley bombing range, and the increased response time for FedFire to get a crew on-site to evaluate and respond to any fires occurring in Superior Valley, are expected to result in an increase in the number of fires generated and in the total acreage affected.

NAWSCL would continue to conduct RDAT&E and training activities in response to current and evolving mission requirements and in accordance with the 2013 BO and applicable land and resources management plans. Additionally, the execution of post-fire biological surveys will result in a better understanding over time of fire effects on desert tortoise and associated habitat. Data from these surveys will contribute on-the-ground information that will be used to revise or refine NAWSCL adaptive fire management measures as needed. However, per 40 CFR § 1502.22(b) (Incomplete or Unavailable Information), the DoN notes that it has only limited historical data at this time with which to assess and project potential impacts to desert tortoises (and other species) from fire. The DoN has gathered data over time on the concentration of desert tortoises in certain areas of NAWSCL, and more limited data on desert tortoise mortality (from fires and otherwise) and on fire-related impacts to critical habitat. Only one focused study on desert tortoise mortality has been completed, evaluating the effects of a 2011 fire over 450 acres in Superior Valley critical habitat. Two tortoise carcasses were located in the burn area but their deaths could not be linked to the fire event. Information from this study is presented in the EIS/LEIS (see, Section 3.4.10 and Table 4.4-1). However, the existing information does not establish with certainty the extent, severity or cause of historical impacts in a manner that would allow the DoN to extrapolate with confidence what the likely impacts of any future fire impacts would be with respect to desert tortoises or their critical habitat. The increased potential for fire events, and the increase in FedFire response time to such events, result in a further level of uncertainty in assessing impacts. It is likely that individual fires would burn longer and therefore spread more widely before efforts are made to bring such fires under control. The DoN is not aware of a method of predicting to what extent this likely would be the case, nor to what extent any such prolonged and more-widespread burning would likely result in quantifiable differences in the level of impacts. If the DoN were able to conduct a comprehensive survey of all ground and burrows impacted by one or more significant wild fire events (events cumulatively covering an area large enough and typical enough to be deemed reliable as a predictor of future impacts) this would clearly be relevant and valuable in evaluating reasonably foreseeable impacts under NEPA. However, to the DoN's knowledge such historical data do not exist at this time. Insofar as the DoN is committed to undertaking surveys subsequent to future fire events (as discussed in Section 3.4.10), the DoN considers it most appropriate at this time to evaluate fire-related impacts to the desert tortoise on the basis of (1) currently available information (as presented in this EIS/LEIS); and (2) what the DoN considers to be a reasonable and logical expectation as to potential future fire-related impacts that errs on the side of

caution (i.e., that assumes possibly more drastic rather than less drastic scenarios), in light of the inevitable uncertainty involved in assessing impacts based on that currently available information.

Accordingly, even with the implementation of the NAWSCL safety protocols, revised fire management measures, and compliance with the 2013 BO, impacts to the desert tortoise and its associated habitat would potentially be significant.

Southwestern Willow Flycatcher and Least Bell's Vireo. Wild fires could result in the loss of riparian vegetation potentially suitable for the flycatcher and vireo. However, while fires associated with range operations within riparian vegetation have been relatively rare on NAWSCL, the areas affected by these events tend to be relatively large (see Table 3.4-3). To reduce the potential effects of fire on the flycatcher and vireo under the Proposed Action, NAWSCL would continue to implement the Installation's fire management measures. Considering the rarity of wild fires in riparian habitats (two documented fires [lightning strike and aircraft crash]), the narrow window of time when flycatchers or vireos would potentially be on NAWSCL, and the fire containment measures to be implemented by the Installation, fire impacts to these species are not expected to be significant. In the event that the DoN needs to respond to a wild fire that may affect these federally listed species, the DoN would request emergency consultation, pursuant to the implementing regulations for Section 7(a)(2) of the ESA (5 CFR 402.02).

Inyo California Towhee. Wild fires on the North Range could result in the loss of suitable Inyo California towhee habitat, including critical habitat. To reduce the potential effects of fire on the towhee under the Proposed Action, NAWSCL would continue to implement the Installation's fire management measures. Considering the relative rarity of wild fires in towhee habitat (two documented fires [lightning strike and aircraft crash]), and the fire suppression measures to be implemented by the Installation, fire impacts to this species would not be expected to be significant. In the event that the DoN needs to respond to a wild fire that may affect this federally listed species, the DoN would request emergency consultation, pursuant to the implementing regulations for Section 7(a)(2) of the ESA (5 CFR 402.02).

NAWSCL Special Status Plants and Wildlife Species. The Installation's land use review and approval processes, health and safety requirements, SOPs for test and training activities, and fire management measures (see Section 3.4.10) would minimize the risk of a wild fire or suppress a fire should one be ignited. Therefore, the potential impacts to sensitive plant and wildlife species that may be in or near the affected area would not be significant.

Other Federally Protected Wildlife Species. When a military-related wild fire occurs, vegetation supporting MBTA-covered species could be consumed by the fire. During the majority of the year (i.e., the non-breeding season), birds can avoid injury or death from wild fires by flying to unaffected adjacent habitat, with the residual impact to species being displacement due to temporary loss of habitat. Wild fires during the nesting season (typically from mid-May through mid-September), have the potential to result in loss of birds at active nests. Wild fire impacts to the majority of the MBTA-covered species would not result in significant adverse impacts to the species widely distributed within the region (the northwestern Mojave Desert), since those populations would be able to remain viable in the long-term. If NAWSCL determines that the effects of a wild fire, due to munitions/target use, or target construction/demolition, may be significantly adverse to a particular population of an MBTA-covered species, then the Installation would be required to confer with USFWS to develop conservation measures to mitigate the impacts.

Potential impacts of wild fires on MBTA-covered species would require NAWSCL to analyze potential adverse effects at the population level, in order to determine whether the activity in question fits within the military readiness waiver. If NAWSCL determines that the effects of a wild fire may be significantly adverse to a particular population of an MBTA-covered species, then the Installation would be required to confer with USFWS to develop conservation measures to mitigate the impacts.

Cumulative Impacts

The INRMP integrates the legal requirements for compliance with the federal ESA and other applicable laws and regulations with long-standing and ongoing conservation practices at NAWSCL. The NAWSCL INRMP provides additional conservation benefits to non-listed species in accordance with DoD and DoN policy and directives, and in accordance with the land use planning guidelines in the FLPMA (43 U.S.C. § 1712). Impacts from the recently completed solar energy project occurring at NAWSCL and school construction project proposed on-installation would be minimized by following the mitigation and conservation measures developed through the NEPA process, and the Section 7 process, as needed. It is anticipated that implementation of the NEPA and/or Section 7 consultation measures would result in those projects not having significant impacts.

Non-NAWSCL projects identified for the cumulative analysis are the construction and operation of the Ridgecrest Solar Power Project, the continuation of geothermal plant operations in the KGRA on NAWSCL, initiating the Deep Rose Geothermal Exploratory Project, the Haiwee Geothermal Leasing Area, the Digital 395 Project, agricultural development, and the proposed zeolite mine. Although Darwin Mesa milkvetch and Booth's camissonia are known to occur near the Coso KGRA, the continuation of DoN geothermal operations within the KGRA would follow NAWSCL protocols for identification and avoidance or minimization of impacts to biological resources. Provisions of the City of Ridgecrest General Plan would keep land use activities at low levels, primarily focusing on infrastructure systems and open space. The proposed Deep Rose Geothermal Exploratory Project and Haiwee Leasing Area activities have undergone separate environmental review by BLM to address potential effects to biological resources, and the DoN's understanding is that these projects implement avoidance and minimization protocols similar to the DoN's. These geothermal development projects would be localized and would affect areas distant from NAWSCL, which makes it less likely that such projects would have significant cumulative biological resources impacts in conjunction with the Proposed Action. The proposed zeolite mine is over 40 miles from the NAWSCL South Range and being evaluated by BLM. Prior to initiating mining activities, environmental documentation would be prepared to address potential effects to biological resources if proposed mining is implemented; however, such environmental analysis has not yet been initiated for the mine project at this time. These projects are expected to comply with the federal and state ESAs; therefore, these projects are not expected to result in significant impacts to biological resources either individually or cumulatively. In addition, these development projects would be localized and/or would affect areas a considerable distance from NAWSCL, which makes it less likely that such projects would contribute in any appreciable way to significant cumulative biological resources impacts in conjunction with the Proposed Action.

It is expected that the Ridgecrest Solar Power Project and recently completed Digital 395 Project have the greatest potential for cumulative biological resources impacts in combination with the Proposed Action. As the Proposed Action for the solar power plant construction is finalized between the California Energy Commission (CEC) and BLM, the EIR and CEC Commissioner's Final Determination for the project is anticipated to address the potential for adverse effects to protected biological resources in the plant area and in a regional context in accordance with the provisions of the federal ESA, and California ESA as appropriate. A similar course of action was taken for the Digital 395 Project. The potential impacts to biological resources that could result from implementing these projects include those to desert tortoise, Mohave ground squirrel, and Mojave fish-hook cactus. The Ridgecrest Solar Power Project's impact to the desert tortoise and Mohave ground squirrel would result in cumulative effects to those species; however, the EIR for the project identifies mitigation measures that would reduce the impacts of the Ridgecrest Solar Power Project on biological resources, such that the impacts are not anticipated to be significant. The Digital 395 Project would potentially have an impact on biological resources. However, the environmental documentation for that project outlines measures to reduce potential impacts to biological resources, and it is anticipated that the Digital 395 Project impacts would not be significant with the implementation of these measures. These projects do not appear to present meaningful risk of

biological resources impacts from fire, and therefore would not have the potential to exacerbate the fire-related impacts of the Proposed Action.

NAWSCL projects and activities identified for the cumulative analysis include items that are not a defined aspect of any of the project alternatives addressed by the EIS/LEIS. This includes establishment of remote EOD training areas outside of Darwin Wash (i.e., the establishment of training corridors/use areas in the Lower Centennial and Coso Peak areas), with an expanded training scope of activities. This proposal would undergo separate NEPA environmental review, and project-specific Section 7 consultation, if determined necessary. It is anticipated that this project would develop and implement appropriate biological resource conservation measures as part of the environmental review and permitting processes, and therefore it is assumed for purposes of this analysis that potential impacts associated with these projects would not in themselves be significant.

The Proposed Action and future off-installation agricultural development could result in impacts to the desert tortoise and other biological resources. However, installation projects are reviewed early in the planning process by NAWSCL environmental staff, and standard procedures are applied to ensure that potential impacts to threatened and endangered species, NAWSCL special status species, and sensitive habitat are avoided or minimized. Whereas the Proposed Action may have impacts on desert tortoise habitat as described above, it is expected that those impacts would be mitigated through pre-event surveys and construction monitoring pursuant to the INRMP, the 2013 BO, and any future BOs prior to any project-related ground disturbance.

Clearing of land for agricultural development could result in an increase in the presence of birds, which could increase the potential BASH hazard for pilots. Proposed off-installation agricultural development is over 6 miles from Armitage Airfield and pilots would typically fly at altitudes where birds are less prevalent (birds will most likely remain near the ground surface). As agricultural development increases. BASH increases would likely occur. Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative impacts to biological resources as it relates to other military land withdrawal actions in the region.

Potential biological resources impacts from development projects in the region either would be localized, would affect areas appreciably distant from NAWSCL, and/or would not be likely to rise to a level having the potential to have appreciable cumulatively significant impacts. It is anticipated that implementation of the NEPA and/or Section 7 consultation measures for these projects (e.g., solar and agricultural developments) would result in those projects not having the potential to have appreciable significant cumulative impacts. However, while the cumulative projects discussed in this section (not including the Proposed Action) would not in themselves seem to have the potential to create significant cumulative impacts, it must be noted that the Proposed Action does have the potential to have significant impacts to biological resources independently—through wild fires started by range activities—and therefore the Proposed Action would necessarily result in significant cumulative impacts in conjunction with the cumulative projects discussed herein.

4.4.2.2 Mitigation Measures and Impact Avoidance and Minimization Measures

Mitigation measures and impact avoidance and minimization measures for impacts to biological resources would potentially include the following:

Mitigation Measures

- Continue the control of wild horses and feral burro populations on NAWSCL;
- Continue the control of invasive species to reduce degradation of plant and wildlife habitats, and to reduce the frequency of wild fires on NAWSCL; and
- Implement provisions stipulated in the most current and applicable BOs (see discussion of BOs in Section 3.4.3.1 and desert tortoise BO in Appendix J).
- Implement provisions of the approved INRMP and successor documents to:
    1. protect and conserve resources occurring throughout the NAWSCL landscape,
    2. continue management of wild horses and feral burro populations and invasive species to reduce degradation of plant and wildlife habitats and reduce the fuel loads influencing the frequency and intensity of wild fires, and
    3. facilitate the execution of current and evolving military mission requirements.

In accordance with the 2013 BO (8-8-12-F-29), the DoN would continue to implement protective measures designed to minimize impacts to desert tortoises. The measures, outlined below, would be assessed during the project planning and approval process, and monitored for compliance and effectiveness:

1. The DoN will minimize incidental injury and mortality of desert tortoises by employing the following measures. Actual measures will be based on the results of site-specific field surveys and will be implemented, as needed, at the discretion of the DoN's environmental personnel (hereafter environmental staff), including:
    a. Clearly delineating the boundaries of new construction or new target and test sites on the ground by flagging, survey lath, or wooden stakes;
    b. Placing signs, as needed, to indicate the need to reduce speeds on roadways and that activities are to be strictly confined to the project site;
    c. Biological monitoring of operations involved with the active removal of desert tortoise habitat known to be near the project site. Activities within existing test and target operations (operations including area preparation, target setup, the actual test event and the target removal and site cleanup) would not require biological monitoring. The purpose of the biological monitoring is to ensure that avoidance and minimization measures have been properly implemented, to assess the effectiveness of these measures and to allow for modifications to minimization measures, as needed; and
    d. Placing desert tortoise-proof fences around projects or portions of projects in desert tortoise habitat where, without such fencing in place, the probability of injuring or killing a desert tortoise is considered to be reasonably foreseeable.
2. Desert tortoise burrows located within 100 feet of the limits of construction or establishment of new target or test site boundaries will be protected by conducting additional on-site project personnel briefings (tailgate). If necessary, the DoN will either (1) place temporary (short-term)

desert tortoise-proof fencing to completely enclose the burrow at a minimum distance of 20 feet from the burrow, or (2) for longer duration construction projects, fence the limits of construction to avoid any potential impacts to desert tortoise.

3. Desert tortoise burrows that cannot be avoided will be excavated by hand either by or under the direct supervision of an authorized biologist. Burrow excavation and subsequent handling of any desert tortoises will follow the most up-to-date guidelines that are acceptable to USFWS.

4. The DoN will submit the credentials of personnel to be designated as authorized biologists to USFWS at least 30 days prior to the onset of the activities to be monitored. The general qualifications and the request form are located on the Ventura Fish and Wildlife Office's website at http: /www.fws.gov/ventura/speciesinformation/protocolsguidelines/index.html.

5. All trash and debris will be promptly contained within containers that common ravens *(Corvus corax)* cannot access. These containers will be regularly removed from project sites to reduce the attractiveness of the area to common ravens and other desert tortoise predators.

6. Environmental staff will conduct awareness briefings for all personnel working in desert tortoise habitat. These briefings will be conducted either in person or via a video presentation of the briefing. At a minimum, the briefings will include discussions of:

    a. the general provisions of the Endangered Species Act;

    b. the necessity for adhering to the provisions of the Act, including both civil and criminal penalties for noncompliance. The penalties for these violations can be a maximum fine of up to $50,000 or imprisonment for 1 year, or both, and civil penalties of up to $25,000 per violation, may be assessed;

    c. the potential for penalties associated with violating the provisions of the Act;

    d. the specific requirements for complying with the provisions of the Act as they relate to each project;

    e. the exact boundaries of the site within which the project activities may be accomplished;

    f. the procedures to be accomplished by project personnel should any problem arise with respect to complying with environmental constraints;

    g. general behavior and ecology of the desert tortoise; its sensitivity to human activities;

    h. the potential for desert tortoises to take refuge under vehicles and of the proper procedures to follow in that event; and

    i. specific procedures to be followed to move a desert tortoise that may be in imminent danger (on a heavily traveled road, on an active project site, or under a vehicle).

7. To avoid impacts to desert tortoises during testing operations (including area preparation, target set up, the actual test event, and target removal or site cleanup) at test and target sites, Range personnel will make one final visual sweep of the target or test impact area to verify that desert tortoises are not present. Range personnel will remove any desert tortoises from imminent danger in accordance with procedures outlined in the Naval Air Weapons Station's awareness

training. Range personnel will notify environmental staff within 24 hours of removing any desert tortoise. The details of removals will be included in the annual reports submitted to USFWS. Range personnel are not required to be USFWS authorized biologists to perform duties associated with this measure.

8. All personnel will check beneath their vehicles while in desert tortoise habitat prior to moving the vehicle. If a desert tortoise is found beneath the vehicle, it will be moved by environmental staff or by project personnel in accordance with guidelines provided to them during the awareness briefings. All personnel will be advised of the potential for desert tortoises to take refuge under vehicles and of the proper procedures to follow in that event. The DoN will report any removals of desert tortoises to USFWS in its annual report.

9. The DoN will use adaptive fire management measures as a framework that recognizes biological uncertainty, while accepting a mandate to proceed on the basis of the best available scientific knowledge. As part of its fire management measures, the DoN will continue to maintain its existing mutual aid fire-fighting agreements with other agencies (BLM, USFS, and County of San Bernardino) and continue to pursue the establishment of new mutual aid agreements. The DoN's goal is to contain all fires, while maintaining operational requirements, and safety and security of range personnel. To reduce the potential for impacts to threatened and endangered species, the DoN will employ the following measures:

    a. Constructing firefighting equipment access roads (which may provide some utility as a fire break), on an as-needed basis, in support of fire containment capabilities around targets. The DoN will use targets and the existing road network to determine where an access road may be prudent to prevent a fire from spreading into a roadless area. The utility of constructing access roads will be discussed with the Naval Air Weapons Station's Fire Department to determine where they would be useful to reduce the risk of fire and/or aid in fire suppression. The DoN will evaluate the benefits of constructing and maintaining access roads relative to both the economic and environmental cost. Access roads would be approximately 12 feet in width. The DoN will attempt to use areas naturally devoid of vegetation, including natural barriers such as washes and lava flows or existing roadways, to minimize maintenance costs and impacts to native species.

    b. Removing excessive vegetation (vegetation at a density that would sustain a fire) growth within the test and target areas, on an as-needed basis to minimize the potential for a large, catastrophic wild fire as a result of range operations. Environmental staff will monitor the annual vegetation growth and work in conjunction with the Range and Fire Departments to determine when and where vegetation management is warranted.

    c. The DoN will conduct post-fire surveys when fires leave the target area and enter adjoining critical habitat and document the date, time, location, cause, and acreage of the fire. Fires will be mapped using a global positioning system (GPS) and plotted on GIS.

    d. In desert tortoise habitat, post-fire surveys will include focused surveys to determine if any desert tortoises have been injured or killed. The DoN will conduct the surveys in accordance with the desert tortoise pre-project survey guidelines (http://www.fws.gov/ventura!species information/protocolsguidelines/index.html) and include the results in its annual report to USFWS. An authorized biologist will lead the surveys.

    e. The DoN will limit post-fire surveys to an annual cumulative acreage of 2,000 acres (1,000 acres in desert tortoise critical habitat and 1,000 acres in outside of desert tortoise critical

habitat). The 2,000-acre limit is due to the practicality and logistical feasibility of conducting timely surveys over an area larger than 1,000 acres in both areas. In the instance of an unforeseen fire that exceeds this acreage, the DoN will consult with USFWS as soon as possible.

10. The primary means to eliminate or minimize impacts to desert tortoises or their habitat will continue to be through the use of avoidance and minimization procedures. These methods include the following:

    a. To the extent possible, project sites will be selected so that they are located in previously disturbed areas.

    b. Surveys for desert tortoises will be accomplished for any project that occurs in potential habitat. Surveys will be conducted to support the analysis conducted under NEPA, for new surface-disturbing projects not analyzed in the ROD for the legislative EIS for the land withdrawal, and where new disturbance may occur in desert tortoise habitat. Biologists will conduct surveys in accordance with the most current USFWS survey guidelines, except surveys may be conducted year-round due to the short timelines associated with the DoN's activities.

    c. If new projects are located in desert tortoise habitat, environmental staff will, in conjunction with project proponents, attempt to reduce impacts by assessing the feasibility of adjusting a project's size, footprint, orientation, and construction method;

    d. If new projects have to be located where desert tortoises are known to occupy the project site, desert tortoises will be relocated by USFWS-authorized biologists prior to start of any activities. Authorized biologists are responsible for adhering to USFWS protocols and guidelines for handling and relocating desert tortoises.

    e. New land-disturbing activities that have occurred within habitats that support desert tortoises will continue to be documented in annual reports submitted to USFWS.

11. The DoN will maintain coordination with USFWS and fulfill annual reporting requirements.

Impact Avoidance and Minimization Measures

Impact avoidance and minimization measures for NAWSCL special status species are applied on a discretionary, non-interference basis when operations personnel determine that a conservation measure that avoids or minimizes a potential effect can be applied in a mission compatible manner. Impact avoidance and minimization measures generally include actions that voluntarily avoid a special status species in an operating area or provide an opportunity to remove a special status species from an area to a similar habitat in a mission compatible location.

Impact avoidance and minimization measures for biological resources would potentially include the following:

1. Continue to conduct focused plant and animal species surveys across the entirety of NAWSCL. Compile these biological data into a GIS system to document current distribution and density of the NAWSCL federally listed and special status species.

   Compilation of this data would establish resource baselines and allow natural resources managers to monitor and detect when a particular special status species, or its habitat, may be in

decline. If a decline in overall species numbers is detected, or if there is a reduction in habitat quality and area, then additional and focused management steps would be implemented to curtail and reduce future impacts on those particular species or habitats.

Compilation of an integrated natural resources database also facilitates project planning and approval processes in support of current and evolving mission requirements.

2. Continue avian surveys and monitoring in accordance with applicable requirements (e.g., MBTA [and Military Readiness Rule], Bald and Golden Eagle Protection Act, etc.) and management plans (e.g., INRMP and CLUMP) in areas that provide suitable perching and nesting habitat for federally protected bird species that have the potential to be adversely affected by activities conducted at NAWSCL.

   For instances where a federally protected avian species may be at risk from a planned activity, project personnel and EMD would work cooperatively to implement appropriate impact avoidance and minimization measures as operational conditions permit.

3. Continue the effective application of project and activity review and approval processes (NAWSCL NEPA Instruction and NAWSCL Site Approval Process) and promote the adaptive reuse of existing operational assets to minimize potential effects to biological resources and the need for new project construction.

4. Increase the level of decision quality information available for use in project planning processes to support mission compatible avoidance or minimization measures and achieving natural resources management goals and objectives. Information collected and catalogued on natural resources would be coordinated with applicable stakeholders. Surveys and monitoring would continue to be conducted on a non-interference basis with military operations.

With regard to fire management at NAWSCL, the following would occur:

- Continue to evaluate and enhance fire management measures on NAWSCL, particularly for areas where wild fires have historically been difficult to control;

- Conduct post-event desert tortoise surveys in accordance with the 2013 BO to assess the potential effect from military activities when fires leave the target area and enter adjoining critical habitat and document the date, time, location, cause, and acreage of the fire. Fires would be mapped using GPS and plotted on GIS;

- In desert tortoise habitat, post-fire surveys would include focused surveys to determine whether any desert tortoises have been injured or killed. The DoN would conduct the surveys in accordance with the desert tortoise pre-project survey guidelines (http://www.fws.gov/ventura/species_information/protocols_guidelines/index.html) and include the results in its annual report to USFWS. An authorized biologist would lead the surveys; and

- Post-fire surveys would be limited to an annual cumulative acreage of 2,000 acres (1,000 acres in desert tortoise critical habitat and 1,000 acres outside of desert tortoise critical habitat). The 2,000-acre limit is due to the practicality and logistical feasibility of conducting timely surveys over an area larger than 1,000 acres in both areas. In the instance of an unforeseen fire that exceeds this acreage, the DoN would consult with USFWS as soon as possible.

4.4.2.3 Summary of Impacts

Since the land withdrawal is a renewal of a previously approved land withdrawal, it, in itself, would not have any direct or indirect impact on management of federally protected or NAWSCL special status

species on the Installation. However, the renewal would allow both continuing and new activities at NAWSCL that would result in impacts.

NAWSCL has prepared a BA, completed a Section 7 consultation with USFWS, and received a final BO from the USFWS on February 19, 2013 to address potential impacts to the federally listed threatened and endangered species that occur on the Installation: the Mohave tui chub, desert tortoise, southwestern willow flycatcher, least Bell's vireo, and Inyo California towhee. The 2013 BO outlines conservation measures to reduce the effects of the project on these threatened and endangered species.

Biological resources would continue to be managed through implementation of the INRMP and the CLUMP. Current and foreseeable military activities would avoid Mohave tui chub, southwestern willow flycatcher, least Bell's vireo, and Inyo California towhee habitats; therefore, impacts associated with the Proposed Action would be considered less than significant. However, if any future need arises where any military activities (e.g., training, construction, etc.) would result in impacts to these species habitat, the activities would be reviewed by EMD on a case-by-case basis—to include potential further consultation with USFWS—and impacts would be minimized to the extent feasible.

Since many of the current military activities on NAWSCL, plus the proposed increase in tempo of up to 25 percent, would occur within desert tortoise habitat, there would be appreciable impacts to the species. However, impacts from military testing and training would typically be confined to existing travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, and instrumentation sites where densities of federally protected species would be expected to be low or non-existent. However, given the historical rates of unintended wild fires resulting from range activities, there would be at least potentially-significant impacts to desert tortoises.

The Proposed Action would also impact NAWSCL special status plant and animal species, MBTA-covered species, as well as non-sensitive plant and animal species. However, military impacts are generally confined to previously disturbed areas, where population densities would be expected to be relatively low. NAWSCL special status plant and animal species, MBTA-covered species, and non-sensitive plant and animal species are generally widely distributed within suitable habitats across NAWSCL. Additionally, NAWSCL special status species would continue to be managed by implementation of existing land use protocols, and would continue to be given appropriate consideration during project planning efforts, and impact avoidance and minimization measures would continue to be implemented to the extent practicable. Therefore, military impacts to NAWSCL special status species, MBTA-covered species, and non-special status species would not be considered significant.

Due to mission necessity and safety considerations, NAWSCL has determined that the use of hot spotting charges would increase in frequency, to facilitate in the location and recovery of spent munitions. Fire-fighting personnel have also been relocated from the South Range. The increased use of hot spotting charges may result in an increase in the number of range fires. Relocation of fire-fighting services from the South Range would increase fire response time in the South Range, thereby increasing the possibility for larger areas of vegetation to be consumed by fire. NAWSCL has proposed measures to mitigate the number and extent of range fires by revising the Installation's fire management strategy. The primary changes in the strategy include an improved process for clearing of UXO and vegetation at target sites in the Superior Valley, the establishment of fire breaks and access roads around target buffers to facilitate more direct access to fires within Superior Valley Critical Habitat, and controlling the spread and establishment of invasive weed species (thereby decreasing fire fuel loads). NAWSCL would continue to maintain existing mutual aid fire-fighting agreements with federal, state, and local agencies. NAWSCL will continue to pursue the establishment of new mutual aid agreements, whenever possible.

Nonmilitary uses would follow the management guidelines outlined in the INRMP. Therefore, nonmilitary uses would not adversely affect the Installation's biological resources and a significant impact would not occur.

NAWSCL would continue to remove excess numbers of horses and burros from both the North and South Ranges. The INRMP update and WHBMP would allow for enhanced management techniques including use of contraceptives, an attempt to place animals into long-term holding facilities, and placement with other organizations, humane groups, Native American tribes, etc. Adopting individuals or groups would still be required to meet BLM adoption guidelines to ensure that they have the ability to properly care for animals and to ensure animals are not acquired simply to dispose of them for profit. Eliminating burros would protect tortoise and other habitats on both the North and South Ranges, would preclude additional burro impacts in towhee habitats, would allow for more rapid forage recovery, and would benefit the wild horse herd by removing competition for resources. Continued management in accordance with the INRMP would have a beneficial effect on the horse herd as well as natural resources generally.

The CLUMP would formalize and integrate the Installation's environmental planning and review processes, and would formalize the standard procedures for impact avoidance and mitigation, which would represent a beneficial impact.

Because RDAT&E activities would continue, current biological resource management practices would remain in place. For activities not addressed under prior Section 7 consultations, NAWSCL has completed an ESA Section 7 consultation with USFWS, and on February 9, 2013, received a BO (8-8-12-F-29) (Appendix J) outlining Protective Measures that would be implemented to avoid jeopardy of the covered species, and avoid or minimize adverse modification to critical habitat of those species. Notwithstanding that the majority of DoN activities at NAWSCL likely would not have the potential to result in significant impacts, the potential for wild fires generated by range activities—in conjunction with historical information as to the number of fires and the inherent uncertainty associated with the number and extent of fire events—indicates the Proposed Action has the potential to result in significant impacts to the desert tortoise. Accordingly, the Proposed Action, in total, would have significant impacts both by itself, and therefore would have significant cumulative impacts in combination with other cumulative projects discussed in Section 4.4 herein and summarized in Table 4.4-2.

4.4.3 Baseline Alternative/Updated No Action Alternative (Alternative 2)

The Baseline Alternative/Updated No Action Alternative includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013) with continuation of military RDAT&E and Training activities at current levels. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised, as appropriate, and implemented to manage land use and environmental resources at NAWSCL.

4.4.3.1 Impacts

Land Withdrawal

The public land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. While the public land withdrawal renewal, as a legislative action, would not in itself have any direct or indirect impacts on biological resources at NAWSCL, the fact of renewal would allow continuing activities at NAWSCL that would have such impacts. The anticipated impacts to biological resources associated with such continuing activities are analyzed in the sections that follow below (e.g., Military Uses, etc.).

Table 4.4-2
Proposed Action (Alternative 1) - Summary of Biological Resources Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures
(Page 1 of 2)

Impacts	Mitigations/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses – Range and Airfield Flight Events	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses – Range Ground Events	
Potentially significant impacts to desert tortoise associated with wildland range fires.	*Mitigation Measures* • Continue the control of wild horses and feral burro populations on NAWSCL. • Continue the control of invasive species to reduce degradation of plant and wildlife habitats, and to reduce the frequency of wild fires on NAWSCL. • Implement provisions stipulated in the most current and applicable BOs (see discussion of BOs in Section 3.4.3.1 and desert tortoise BO in Appendix J). • Implement provisions of the approved INRMP and successor documents. *Impact Avoidance and Minimization Measures* • Continue to conduct focused plant and animal species surveys across the entirety of NAWSCL. Compile these biological data into GIS to document current distribution and density of the NAWSCL federally listed and special status species. • Compilation of these data would establish resource baselines and allow natural resources managers to monitor and detect when a particular special status species, or its habitat, may be in decline. If a decline in overall species numbers is detected, or if there is a reduction in habitat quality and area, then additional and focused management steps would be implemented to curtail and reduce future impacts on those particular species or habitats. • Compilation of an integrated natural resources database also facilitates project planning and approval processes in support of current and evolving mission requirements. • Continue avian surveys and monitoring in accordance with applicable requirements (e.g., MBTA [and Military Readiness Rule], Bald and Golden Eagle Protection Act, etc.) and management plans (e.g., INRMP and CLUMP) in areas that provide suitable perching and nesting habitat for federally protected bird species that have the potential to be adversely affected by activities conducted at NAWSCL. • For instances where a federally protected avian species may be at risk from a planned activity, project personnel and EMD would work cooperatively to implement appropriate impact avoidance and minimization measures as operational conditions permit. • Continue the effective application of project and activity review and approval processes (NAWSCL NEPA Instruction and NAWSCL Site Approval Process) and promote the adaptive reuse of existing operational assets to minimize potential effects to biological resources and the need for new project construction. • Increase the level of decision quality information available for use in project planning processes to support mission compatible avoidance or minimization measures and achieving natural resources management goals and objectives. Information collected and catalogued on natural resources would be coordinated with applicable stakeholders. Surveys and monitoring would continue to be conducted on a non-interference basis with military operations.

Table 4.4-2
Proposed Action (Alternative 1) - Summary of Biological Resources Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures
(Page 2 of 2)

Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Wild Horse and Burro Management Impacts	
Continuation of current management practices with respect to wild horses and burros would have a positive effect on the respective herds as well as natural resources generally. The INRMP update (and Wild Horse and Burro Management Program) would enhance these positive effects.	*Mitigation Measures* Continue the control of wild horses and feral burros on NAWSCL to better protect natural resources, such as riparian habitats associated with the Inyo California towhee. *Impact Avoidance and Minimization Measures* No impact avoidance and minimization measures.
Fire Management Impacts	
Potentially significant impacts associated with the increased use of hot spotting charges in order to optimize safety, and to facilitate the tracking and retrieval of munitions. Potentially significant impact associated with the elimination of fire-fighting personnel from the South Range, increasing the fire response time.	*Mitigation Measures* Continue the control of invasive species to reduce degradation of plant and wildlife habitats, and to reduce the frequency of wild fires on NAWSCL. *Impact Avoidance and Minimization Measures* • Continue to evaluate and enhance fire management measures on NAWSCL, particularly for areas where wild fires have historically been difficult to control. • Conduct post-event biological surveys in accordance with the 2013 BO to assess the potential effect to natural resources from military activities when fires leave the target area and enter adjoining critical habitat and document the date, time, location, cause, and acreage of the fire. Fires would be mapped using GPS and plotted in GIS. • In desert tortoise habitat, post-fire surveys would include focused surveys to determine whether any desert tortoises have been injured or killed. The DoN would conduct the surveys in accordance with the desert tortoise pre-project survey guidelines (http://www.fws.gov/ventura/species_information/protocols_guidelines/index.html) and include the results in its annual report to USFWS. An authorized biologist would lead the surveys. • Post-fire surveys would be limited to an annual cumulative acreage of 2,000 acres (1,000 acres in desert tortoise critical habitat and 1,000 acres outside of desert tortoise critical habitat). The 2,000-acre limit is due to the practicality and logistical feasibility of conducting timely surveys over an area larger than 1,000 acres in both areas. In the instance of an unforeseen fire that exceeds this acreage, the DoN would consult with USFWS as soon as possible.
Cumulative Impacts	
Significant impacts.	Mitigation measures addressed above. Impact avoidance and minimization measures addressed above.
Overall Summary	
Due to potential fire impacts to desert tortoise, the Proposed Action would have significant impacts.	Mitigation measures addressed above. Impact avoidance and minimization measures addressed above.

Military Uses

Range Flight Events

As described in Section 3.2, noise associated with flight test and training events varies in intensity and duration. Many species (including desert tortoise) have shown the ability to acclimate to supersonic noise events (U.S. Air Force 1999). USFWS issued the Revised Recovery Plan for the Mojave Population of the Desert Tortoise, which concluded that noise from jet aircraft and sonic booms are not likely to be dangerous in association with short-term exposure, but that insufficient information exists to extrapolate potential effects of exposure over the lifetime of a tortoise (USFWS 2011). Studies by Awbrey and Hunsaker indicated that noise associated with military fixed-wing aircraft and helicopter overflights had no detectable effect on reproductive success of songbirds after the nest was built (Awbrey and Hunsaker 1997, 2000). Additionally, studies have indicated that in general, wildlife species acclimate to aircraft noise (Appendix I). Therefore, impacts from range flight events are not considered to be significant.

BASH events have been recorded at NAWSCL involving species afforded protection under the MBTA, including turkey vultures and pelicans. These events are documented per the requirements of the NAWSCL BASH Plan. Implementation of the BASH Plan minimizes adverse impacts to avian species, while maintaining the mission of the Installation. Continued aircraft flight events over the George LMU of the North Range would result in a continued low risk of BASH. The primary areas of BASH potential are at the airfield and over the Installation's sewer ponds and associated drainage to Lark Seep and China Lake playa. BASH events can also include aircraft hitting terrestrial animals, such as rabbits, coyotes or burros, on the runway. As noted in Section 3.4, historical records indicate that the potential for BASH incidents is low (i.e., approximately two per year for both range and airfield flight events).

As a requirement of the military readiness waiver, NAWSCL must consider whether an ongoing or proposed activity may result in a significant adverse effect on the population of a migratory bird species. If a significant adverse effect is anticipated, NAWSCL would be required to confer and coordinate with USFWS to develop conservation and/or minimization measures to mitigate the adverse effects. NAWSCL monitors BASH events and maintains records of these events, as required under the NAWSCL BASH Plan. Implementation of the BASH Plan minimizes, to the extent feasible, adverse impacts to avian species, while maintaining the mission of the Installation. Based on current knowledge, no significant adverse impacts to any populations of MBTA-covered species are associated with airfield flight activities at NAWSCL. Therefore, impacts to biological resources would not be significant.

Airfield Flight Events

Airfield operations include aircraft flights and associated ground-based activities such as engine maintenance and testing, and aircraft fueling. Ground-based activities are conducted at established facilities throughout the airfield, and have no effect on federally protected species or NAWSCL special status species. Airfield flight events do overfly areas that are identified as desert tortoise and towhee habitat, and riparian areas that have the potential to support either the southwestern willow flycatcher or least Bell's vireo. The existing desert tortoise BO (1995) documented the mission of the Installation and the types of activities that typically occurred on the Installation. The 2013 BO (8-8-12-F-29 [Appendix J]) now supersedes the previous BO. Since airfield operations were part of the NAWSCL training activities at the time of the issuance of the BO, potential effects to the desert tortoise were accounted for at that time, and no additional adverse effects to federally protected species, critical habitats, or NAWSCL special status species are expected. The 2013 BO summarizes the previous consultation history and conclusions of those efforts. The 2013 BO reaffirms that the DoN's activities addressed under prior consultation would not jeopardize the continued existence of the desert tortoise, nor would those activities result in the destruction or adverse modification of tortoise critical habitat. Noise from NAWSCL activities would continue to be of a relatively infrequent nature and not of sufficient strength to disrupt desert tortoise or other species for extended periods. The desert tortoise has been shown to be able to acclimate to loud military aircraft noise, and the USFWS has concluded that noise associated with jet aircraft would not

likely be dangerous to the desert tortoise (U.S. Air Force 1999, USFWS 2011). Studies by Awbrey and Hunsaker have shown that overflights by military fixed-wing aircraft do not result in a detectable effect on the reproductive success of songbirds after the nest has been completed (Awbrey and Hunsaker 1997, 2000), and various additional studies have indicated that, in general, wildlife can acclimate to aircraft noise (Appendix I). Therefore, ongoing airfield flight events would not adversely affect federally protected species, or NAWSCL special status species. Potential impacts would not be significant.

Continued aircraft flight events at Armitage Airfield would result in a continued low risk of BASH. As discussed above for range flight events, the potential for a BASH event is low, and impacts would not be significant.

Range Ground Events

Target and Test Site Use. Potential effects of continued target and test site use on federally protected species at NAWSCL are discussed below. No NAWSCL special status species are known to occur within target or test site areas where vegetation has been cleared and maintained in an unvegetated or disturbed state, with the exception of species such as the burrowing owl, which have been documented along the disturbed edges adjacent to roads, staging areas, bone yards and other areas. Additionally, habitat for listed, other federally protected, and various NAWSCL special status species is known to exist within portions of the test and target sites that remain naturally vegetated, as well as in the buffers around the target and test sites. NAWSCL would carefully manage those target sites that remain naturally vegetated.

Mohave Tui Chub. The continuation of current range ground activities at target and test sites would not affect Mohave tui chub, since its habitat is located away from military activities.

Desert Tortoise. Approximately 355 square miles (919 square kilometers) of NAWSCL lands are identified as potential desert tortoise habitat. Target and test sites in desert tortoise habitat include specified use areas on portions of Baker, Charlie, and George ranges; SNORT LMU; Mainsite LMU; Propulsion Laboratories LMU; Airport Lake LMU; Coso Geothermal LMU, and a small section of the Coso LMU on the North Range (see Figure 3.4-9); and portions of Mojave B North, Randsburg Wash, and Mojave B South/Superior Valley on the South Range (see Figure 3.4-10). No target or test site areas are located in desert tortoise habitat with populations greater than 20 animals per square mile (i.e., high-density habitat; refer to Section 3.4.4.2), based on tortoise density estimates (Kiva Biological Consulting and Epsilon Systems Solutions 2004). The PMTC site is approximately 2 miles (3.2 kilometers) southwest of an area with an estimated high density of tortoises on the west flank of George Range. Because most targets are outside desert tortoise habitat, desert tortoises are not expected to nest, burrow, or forage within these target and test areas, but could occasionally transit through these areas. The likelihood of a munitions fragment hitting an individual desert tortoise within the buffer zone is considered very low. Most documented tortoise mortalities on the Installation are caused by motor vehicle impacts and are illustrated in Table 4.4-1.

As described for the Proposed Action, wild fires associated with the Baseline Alternative/Updated No Action Alternative range ground activities have the potential to significantly impact the tortoise. NAWSCL would continue to conduct range ground activities in accordance with the procedures designed to minimize impacts to desert tortoises in the 2013 BO (8-8-12-F-29).

Southwestern Willow Flycatcher and Least Bell's Vireo. The willow flycatcher and the least Bell's vireo have been noted on NAWSCL as migrants. Sufficient information is not available to determine whether these migrants are the endangered subspecies. The riparian areas on NAWSCL represent potentially suitable habitat for these two species.

No target or test sites are located within riparian habitat potentially suitable for either the southwestern willow flycatcher or the least Bell's vireo, and therefore the majority of potential activities associated with range ground events would not impact either species. However, wild fires associated with range activities can occur and are discussed at the end of this section (Section 4.4.3.1).

Inyo California Towhee. The continuation of current range ground activities would not affect Inyo California towhee habitat because target and test sites are not located within Inyo California towhee habitat. However, NAWSCL efforts to maintain safe road access to the range areas were addressed through an informal consultation with USFWS in 1990. Maintenance (trimming) of willows in the Mountain Springs Canyon area is occasionally required to facilitate safe vehicular access to the upper range areas and is conducted (when needed) in accordance with procedures established in 1990. These maintenance procedures call for trimming back the willows that extend onto the paved roadway at several points in the canyon. Trimming is conducted outside of the nesting season. Vehicular traffic through Inyo California towhee habitat may pose a very slight potential for Inyo California towhees to be struck by vehicles along the paved Mountain Springs Canyon Road. Since military activities in these areas do not adversely affect Inyo California towhees or towhee habitat, no impacts would occur to towhees from the continuation of current target and test site use. Additionally, NAWSCL implements the Cooperative Management Agreement conservation measures for the benefit of this species.

As previously mentioned, wild fires could result in the loss of habitat (including critical habitat) for the Inyo California towhee and displacement of towhees in habitat that is burned. Fire management is discussed at the end of this section (Section 4.4.3.1).

NAWSCL Special Status Plant and Wildlife Species. NAWSCL special status plant species are found in areas that are used for range ground activities. NAWSCL special status plant species known to occur in the vicinity of range ground activities are relatively widely distributed in suitable habitat areas on the Installation. Additionally, NAWSCL special status species would continue to be managed by implementation of existing land use protocols, would continue to be given appropriate consideration during project planning efforts, and since impact avoidance and minimization measures would continue to be implemented to the extent practicable, impacts to these species should remain less than significant. No changes are proposed as part of the Baseline Alternative/Updated No Action Alternative; therefore, potential impacts from the continuation of current RDAT&E and training activities on NAWSCL special status plant species would not be significant. The Installation's fire management measures (see Section 3.4.10) would facilitate the containment of a fire, therefore reducing potential impacts to sensitive plant and wildlife species that may be in or near the affected area. Fire management is discussed at the end of this section (Section 4.4.3.1).

NAWSCL special status wildlife species have been documented as occurring within and adjacent to some of the proposed disturbance footprints at target or test site areas. Examples of these species include Mohave ground squirrel, prairie falcon, and LeConte's thrasher. Invertebrate species such as Jerusalem crickets, dune cockroaches, dune weevils, and giant fairy shrimp, bird species such as the burrowing owl, and mammals such as the Argus Mountain kangaroo rat, may also occur within the primary buffer zones and in relatively undisturbed or revegetating the target and test sites. Results of field surveys characterizing the ground disturbance patterns around target and test sites throughout the NAWSCL ranges (Tetra Tech 1999) indicated that the extent of ancillary impacts to the impact area buffer zones is minimal. While there is some potential for an individual animal to be affected by ongoing munitions use at these sites, the likelihood of significantly affecting any NAWSCL special status species is low. Additionally, NAWSCL special status species would continue to be managed by implementation of existing land use protocols, would continue to be given appropriate consideration during project planning efforts, and since impact avoidance and minimization measures would continue to be implemented to the extent practicable, impacts to these species should remain less than significant. Therefore, the

continuation of current use of target and test sites would continue to have no significant impact on NAWSCL special status wildlife species.

Major playa lakes on NAWSCL include China Lake, Mirror Lake, Satellite Lake, Paxton Ranch Playa, and Airport Lake, all within the North Range, and Movie Lake in the South Range. In addition, there are as many as 80 smaller unnamed playas ranging from hundreds of acres to less than one acre within the ranges. Many lake playas including Mirror, China, and Airport Lake support giant fairy shrimp, a NAWSCL special status species. Primarily lightweight vehicles travel on the lakebed in support of RDAT&E activities. These types of vehicles have minimal effect on the lakebed surface, which is very hard and not used when wet. Therefore, use of target and test sites has a low impact on biological resources within playas.

Wild Horses and Burros. Management of wild horses and burros on NAWSCL adheres to the Sikes Act, the FLPMA, and the Wild Free Roaming Horses and Burros Act. Wild burros presently occur on both the North and South Ranges and horses continue to graze primarily in the higher elevations of the Coso and Argus Mountain areas on the North Range. NAWSCL has previously implemented feral horse and burro management strategies to maintain viable populations of wild horses and burros on the Installation by removing excess numbers of these animals from both the North and South Ranges. As discussed in Section 1.2.2.1, a revised WHBMP has been prepared and has been adopted as part of an update to the Installation's INRMP. NAWSCL would not, except as an act of mercy, destroy any wild horse or burro without appropriate authorization. Sick or lame animals would be destroyed, when necessary, in the most humane manner possible. While there is some potential for wild horses and burros to be affected by ongoing test and training operations, the majority of the wild horses and burros on NAWSCL are located in the higher elevations on the North Range. Therefore, the likelihood of significantly affecting any wild horses or burros is low. NAWSCL would continue to implement the management strategies in the INRMP to include utilizing fertility control measures pursuant to the INRMP/WHBMP update discussed in Section 1.2.2.1, which would have a positive effect on the respective herds as well as natural resources generally. With respect to impacts caused by horses and burros (to other biological resources, hydrology and water quality, geology and soils, and cultural resources), please see discussion of wild horses and burros and related impacts in Section 4.4.2.1.

Other Federally Protected Wildlife Species. A small number of the MBTA-covered species known to occur on NAWSCL are afforded further/greater protection under either the ESA or the Bald and Golden Eagle Protection Act, and impacts to those species are discussed separately. The other MBTA-covered species that occur on NAWSCL are also known from suitable habitats in the vicinity of Ridgecrest, as well as within the general region, or are associated with habitats of limited distribution on NAWSCL, such as riparian areas, or have large territory requirements. While there is some potential for these species to be affected by ongoing munitions use at these sites, the likelihood of significantly affecting any MBTA-species is low. Therefore, continuation of the current use of target and test sites may have a correspondingly low impact on these species.

During the majority of the year (i.e., the non-breeding season), birds can avoid injury or death from wild fires by flying to unaffected adjacent habitat, with the residual impact to species being displacement due to temporary loss of habitat. Wild fires during the nesting season have the potential to result in loss of birds at active nests. Wild fire impacts to the majority of the MBTA-covered species would not result in significant adverse impacts to the species widely distributed within the region (the northwestern Mojave Desert), since those populations would be able to remain viable in the long-term. Fire management is discussed at the end of this section (Section 4.4.3.1).

Non-Special Status Wildlife and Plant Species. Various non-special status wildlife and plant species have been documented as occurring on NAWSCL. These general, non-sensitive wildlife and plant species

occur on NAWSCL in the various desert scrub and riparian habitats that are associated with regulated and otherwise protected species such as the desert tortoise and Inyo California towhee, and other sensitive wildlife and plant species. As such, the resource management measures enacted by NAWSCL to protect special status species would also concurrently afford protection of non-special status species. The analyses of impacts associated with the various special status species on NAWSCL are therefore similar to what is expected for non-special status species, with potential impacts from noise, wild fire, and other military-related impacts considered not significant to non-special status species.

EOD Training. EOD training is primarily conducted at the EOD Training Facility, and the Joint Counter IED Facility (JCIF) in Darwin Wash. Other areas where EOD training occurs includes the west side of Darwin Wash and as far west as China Garden Spring, and in Lower Centennial in the Coso South LMU. Under the Baseline Alternative/Updated No Action Alternative, the 2-week training classes would continue at the current rate. Existing resource management measures outlined in the CLUMP and INRMP would continue to be applied. Therefore, the Baseline Alternative/Updated No Action Alternative would not result in any effects to any managed wildlife or plant species, any NAWSCL special status species, or any non-sensitive wildlife or plant species.

Ground Troop Training. GTT is a routine component of NAWSCL test and training activities. Potential effects of continued GTT on federally protected species at NAWSCL and NAWSCL special status species, as well as non-special status wildlife and plant species, are discussed below. No changes to GTT are proposed.

Mohave Tui Chub. Mohave tui chub habitat is not located near GTT areas of operation; therefore, the continuation of current GTT activities on NAWSCL ranges would have no significant impact on Mohave tui chub or its habitat.

Desert Tortoise. GTT activities would not change under the Baseline Alternative/Updated No Action Alternative. GTT activities would continue to be restricted to approved areas (see Section 2.3.2.2 Range Ground Events) throughout the NAWSCL ranges. GTT activities would continue to be conducted within designated desert tortoise critical habitat in Superior Valley Tactical Training Range, on the east and west sides of Superior Valley. While GTT activities have some potential to affect desert tortoise and its habitat, existing management practices (as defined in the CLUMP and INRMP) are applied to keep larger GTT events (8 to 40 individuals) limited to approved areas, and environmental awareness briefings are mandatory. NAWSCL initiated the Section 7 consultation for these actions and a BO (8-8-12-F-29) was issued on February 19, 2013 (see Appendix J). Therefore, no significant impacts to desert tortoise from the continuation of GTT activities are anticipated.

Southwestern Willow Flycatcher and Least Bell's Vireo. If any GTT activities are required in riparian areas, NAWSCL would coordinate ground-disturbing activities away from riparian habitat during the breeding season, and would assess any activities that could impact riparian habitat within the range of the species on the Installation. Therefore, any ground-disturbing activities conducted in potential southwestern willow flycatcher or least Bell's vireo habitat associated with the Baseline Alternative/Updated No Action Alternative would be assessed on an individual basis. Therefore, it is likely that there would be no significant impacts to the southwestern willow flycatcher or the least Bell's vireo from the continuation of current GTT activities.

Inyo California Towhee. NAWSCL would continue to implement the towhee CMA between the Installation, USFWS, BLM, and CDFG. Per the Cooperative Management Agreement, NAWSCL would continue to redirect ground-disturbing activities away from towhee habitat to the extent practicable, and would assess any activities that could impact riparian habitat within the range of the species on the Installation. Activities that may affect the Inyo California towhee would also require initiation of USFWS consultation.

Therefore, it is considered unlikely that there would be significant impacts to Inyo California towhees from the continuation of current GTT activities.

NAWSCL Special Status Plant and Wildlife Species. Known plant NAWSCL special status species are found in areas that are used for GTT activities. GTT activities would not change under the Baseline Alternative/Updated No Action Alternative. Therefore, potential impacts of the continuation of current GTT activities on plant NAWSCL special status species would not be considered significant.

Known NAWSCL special status wildlife species are found in areas that are used for GTT activities. GTT activities would not change under the Baseline Alternative/Updated No Action Alternative. Additionally, NAWSCL special status species would continue to be managed by implementation of existing land use protocols, would continue to be given appropriate consideration during project planning efforts, and since impact avoidance and minimization measures would continue to be implemented to the extent practicable, impacts to these species should remain less than significant. Therefore, potential impacts from the continuation of current GTT activities on NAWSCL special status wildlife species would not be considered significant.

Wild Horses and Burros. While there is some potential for wild horses and burros to be within areas utilized for GTT activities, such training activities are typically conducted in a manner that would not result in the injury or death of a wild horse or burro. Therefore, GTT activities are not expected to significantly affect wild horses or burros.

Other Federally Protected Wildlife Species. GTT activities would not be expected to adversely affect the ability of any MBTA-covered species to maintain stable populations within the northwestern Mojave Desert. Changes in RDAT&E and training tempos may result in additional but less than significant impacts to special status species. Any as yet unidentified requirements that may result in changes in RDAT&E and training footprints would be addressed on a case-by-case basis with biological surveys conducted to determine species presence/absence. Therefore, the Baseline Alternative/Updated No Action Alternative would not result in any significant impacts to MBTA-covered species in association with GTT.

Non-Special Status Wildlife and Plant Species. Various non-special status wildlife and plant species have been documented as occurring on NAWSCL. These general, non-sensitive wildlife and plant species occur on NAWSCL in the various desert scrub and riparian habitats that are associated with regulated and otherwise protected species such as the desert tortoise and Inyo California towhee, and other sensitive wildlife and plant species. As such, the resource management measures enacted by NAWSCL to protect special status species would also concurrently afford protection of non-special status species. The analyses of impacts associated with the various special status species on NAWSCL are therefore similar to what is expected for non-special status species, with potential impacts from noise, wild fire, and other military-related impacts considered not significant to non-special status species.

Directed Energy Events

DE activities on NAWSCL include testing of HEL and HPM systems. HEL and HPM testing would include air-to-air, air-to-ground, surface-to-air, surface-to-surface, and electromagnetic scenarios as well as static tests. Multiple concurrent DE events could occur on a daily basis across NAWSCL. For the purpose of this EIS/LEIS, engagement areas represent areas where DE systems would maneuver and operate. Focused EM areas could exceed power levels for uncontrolled environments (see Section 3.10.8.1 for a description of controlled and uncontrolled environments). Focused EM areas, which could include EM source systems (the shooter), the system under test, and associated test instrumentation, would be located on travel surfaces (e.g., roads, turnouts), target areas, and instrumentation sites.

Air-to-air, surface-to-air, and air-to-ground DE system activities would feasibly include engagement areas from anywhere on the North and South Ranges. The Baseline Alternative/Updated No Action Alternative would utilize the same engagement and focused EM areas as the Proposed Action (Appendix B). However, the tempo associated with the Baseline Alternative/Updated No Action Alternative is lower than that assumed for the Proposed Action.

Air-to-air and air-to-ground testing over the playa lakes on NAWSCL would occasionally result in a relatively small amount of debris scatter onto the surface of the playas where such testing typically occurs. Although these playa lakes support giant fairy shrimp, a NAWSCL special status species, the overall impact to the species from sparse and occasional debris scatter is negligible, relative to the overall health of the population of the giant fairy shrimp and the playa ecosystem. Therefore, air-to-air and air-to-ground test events have a low impact on biological resources within playas.

High-Energy Laser Use. Each proposed test of, or training use of a HEL system would follow the protocols of OPNAVINST 5100.27B, *Navy Laser Hazards Control Program*. As such, the DoN would require as standard procedure that no persons, wildlife, reflective surfaces, or non-target obstructions of any sort are present within the hazard area between the laser and the target. Safety procedures and control measures provided in MIL-HDBK-828B, *Range Laser Safety*, ensure that the laser cannot be fired until it is locked onto the target. Section 3.10.10 provides greater detail regarding these control measures. The likelihood that an undetected animal could move into the path of the beam as the laser is triggered is considered remote.

Potential effects on federally protected species from the Baseline Alternative/Updated No Action Alternative testing of HEL weapons at NAWSCL are discussed below.

Mohave Tui Chub. HEL weapons activities at target and test sites under the Baseline Alternative/Updated No Action Alternative would not affect Mohave tui chub, since its habitat is located away from military activities.

Desert Tortoise. The desert tortoise and its habitat on NAWSCL were described above in the discussion on range ground events. Because most of the test and target sites are outside the desert tortoise habitat, desert tortoise is not expected to nest, burrow, or forage within the majority of the target and test areas, but could occasionally transit through these areas, particularly where tortoise habitat is immediately adjacent to many of the smaller target areas.

The likelihood of an HEL weapon hitting an individual desert tortoise is extremely low, as testing and safety protocols have been established to minimize such occurrences. NAWCWD activities must comply with OPNAVINST 5100.27B, *Navy Laser Hazards Control Program* and must be approved by the NAWCWD Range Laser System Safety Officer (RLSSO). This instruction incorporates the industry standard, ANSI Z136.1, *Safe Use of Lasers*, into its requirements (ANSI 2007). In addition to OPNAVINST 5100.27B, NAWCWD implements a detailed Risk Hazard Assessment (RHA)/SOP process prior to the use of laser systems on the ranges. Safety protocols are previously described in Section 3.10.10.

Prior to initiating HEL test activities, visual inspection of the target area would be conducted by operations personal according to safety SOPs and requirements concurrent with inspections for humans. Should desert tortoises be observed during pre-test safety checks, they would be removed by EMD or other trained personnel.

Reflected laser energy from HEL activities may retain enough energy to potentially cause vision and/or skin damage, should a laser reflect off of a mirror-like (or specular) object. Such objects are not allowed to

be intentionally placed on NAWSCL ranges. Pre-test screens are performed to identify and remove any potential specular surfaces resulting as debris from previous RDAT&E activities, in accordance with MIL-HDBK-828B.

In rare instances, HEL tests may result in fire or explosion due to the rapid heating of objects from a focused beam. Fire management is discussed at the end of this section (Section 4.4.3.1).

Implementation of the measures described above would ensure that HEL activities would likely have no effect on the desert tortoise population of NAWSCL. Therefore, no significant impacts to desert tortoise are expected from the HEL activities associated with the Baseline Alternative/Updated No Action Alternative.

Southwestern Willow Flycatcher and Least Bell's Vireo. Under the Baseline Alternative/Updated No Action Alternative, HEL weapons tests would not affect habitat potentially suitable for the southwestern willow flycatcher and the least Bell's vireo because target and test sites are not located within riparian habitat. Therefore, no significant impacts to either of these species are expected from the proposed HEL activities.

Inyo California Towhee. Under the Baseline Alternative/Updated No Action Alternative, HEL weapons tests would not affect Inyo California towhee habitat because target and test sites are not located within Inyo California towhee habitat, therefore HEL activities have a low likelihood to impact Inyo California towhee. Therefore, it is unlikely significant impacts to Inyo California towhee would occur from the HEL activities associated with the Baseline Alternative/Updated No Action Alternative.

NAWSCL Special Status Plant and Wildlife Species. NAWSCL special status plant species have been identified in two target areas at NAWSCL that are associated with HEL activities under the Proposed Action: the Coso Range in the Coso LMU, and the Coles Flat targets in the Coles Flat LMU. The Darwin milk-vetch, pinyon rock cress, desert bird's beak, and a plant tentatively identified as Panamint mariposa lily are known to occur throughout the Coso Range. Because of the large numbers of these plants scattered throughout the ranges, the use of target and test sites at NAWSCL for HEL activities is not anticipated to have a significant impact on NAWSCL special status plant species.

The likelihood of affecting any NAWSCL special status species is very low. Additionally, NAWSCL special status species would continue to be managed by implementation of existing land use protocols, would continue to be given appropriate consideration during project planning efforts, and since impact avoidance and minimization measures would continue to be implemented to the extent practicable, impacts to these species should remain less than significant. Therefore, the continuation of HEL weapons testing under the Baseline Alternative/Updated No Action Alternative is not anticipated to have a significant impact on NAWSCL special status plant species.

Wild Horses and Burros. Wild horses and burros are known to occur within and adjacent to areas where HEL weapons could be deployed at target or test site areas. There is a potential for HEL activities to impact wild horses and burros, by either causing blindness, or burning. However, given the number of wild horses and burros on the Installation and frequency of HEL activities, the likelihood of significantly affecting any wild horses or burros is very low. Therefore, the ongoing HEL activities would not have a significant impact on wild horses and burros on NAWSCL.

Other Federally Protected Wildlife Species. Based on the potentially broad applicability of HEL activities across the Installation, a wide variety of NAWSCL special status wildlife species are known to occur within and adjacent to areas where HEL weapons could be deployed at target or test site areas. There is a potential for HEL activities to impact NAWSCL special status wildlife species, by either causing

blindness, or burning. The likelihood of affecting any MBTA-covered species is very low. Therefore, the continued use of HEL weapons testing under the Baseline Alternative/Updated No Action Alternative would not have a significant impact on MBTA-covered species.

Non-Special Status Wildlife and Plant Species. Non-special status wildlife and plant species occur on NAWSCL in the various desert scrub and riparian habitats that are associated with regulated and otherwise protected species, such as the desert tortoise and Inyo California towhee, and special status wildlife and plant species. As such, the resource management measures enacted by NAWSCL for protected species would also concurrently afford protection of non-special status species. The analyses of impacts associated with the various special status species on NAWSCL are therefore similar to what is expected for non-special status species, with potential impacts from noise, wild fire, and other military-related impacts considered not significant to non-special status species.

High-Power Microwave Use. Non-lethal antipersonnel HPM systems operate at relatively high frequency (approximately 100 GHz). At this frequency, the microwave energy will penetrate 1/64 inch of human skin. These weapons can be operated as continuous wave or pulsed wave systems and emit radiation that is absorbed by the target's skin, causing rapid heating and pain. These systems have little effect on electronics. Non-lethal antipersonnel HPM systems tests on human subjects resulted in skin burns (caused by induced electrical currents rather than water-bond excitation) in less than one-tenth of one percent of test subjects (8 in over 11,000 exposures) (LeVine 2009). There is a low probability that biological resources could be affected (i.e., burned or otherwise injured).

Counter-electronics HPM systems operate at lower frequencies (<10 GHz). These systems operate in short pulses (usually <1 µsec), with low average power. At low power, counter-electronics HPM systems can disrupt target systems. Higher power counter-electronics HPM systems can effectively damage electronic systems. Counter-electronics HPM systems have little to no effect on biological systems.

Potential impacts on wildlife species would be minimized by implementing control techniques to monitor the width of the HPM beam and engineered controls to ensure the HPM systems are focused on the intended target. Human health and safety standards for EM activities are provided in ANSI/IEEE C95.1, *IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,* and NAVSEA OP3565/NAVAIR 16-1-529, *Electromagnetic Radiation Hazards*, Each proposed test of, or training use of a HPM system would follow the protocols of human health and safety standards as provided in:

- ANSI/IEEE C95.1, IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz;
- DoD Instruction 6055.11, Protecting Personnel from Electromagnetic Fields; and
- NAVSEA OP3565/NAVAIR 16-1-529, Electromagnetic Radiation Hazards.

Section 3.10.8 provides a summary of the controls and procedures that must be implemented during HPM system operation. Potential effects on federally protected and NAWSCL special status species at NAWSCL from the continued use of HPM weapons under the Baseline Alternative/Updated No Action Alternative are discussed below.

Mohave Tui Chub. The expansion of current HPM activities at target and test sites under the Baseline Alternative/Updated No Action Alternative would have no effect on Mohave tui chub populations at NAWSCL, since its habitat is located away from military activities.

Desert Tortoise. The desert tortoise and its habitat on NAWSCL were described above in the discussion of Range Ground Operations. Because most test and target sites are outside the desert tortoise habitat, desert tortoise is not expected to nest, burrow, or forage within the majority of the target and test areas, but could occasionally transit through these areas, particularly where tortoise habitat is immediately adjacent to many of the smaller target areas.

Potential HPM impacts were presented for the desert tortoise under the discussion of the Proposed Action. It is anticipated that desert tortoises would only be exposed to HPM energy for brief periods of time, if at all, and the period of exposure may not be sufficient to cause any adverse effects.

Prior to initiating HPM test activities, visual inspection of the target area would be conducted by operations personal according to safety SOPs and requirements concurrent with inspections for humans. Should desert tortoise be observed during pre-test safety checks, they would be removed by EMD or other trainer personnel and environmental staff would be contacted within 24 hours.

The risk of HPM ignition of wild fires is beyond reasonable expectation. Implementation of the measures described above would ensure that HPM activities would have no effect on the desert tortoise population of NAWSCL. Therefore, no significant impacts to desert tortoise are expected from the HPM activities associated with the Baseline Alternative/Updated No Action Alternative.

Southwestern Willow Flycatcher and Least Bell's Vireo. Under the Baseline Alternative/Updated No Action Alternative, HPM tests would not occur within habitat potentially suitable for the southwestern willow flycatcher and the least Bell's vireo. Therefore, no significant impacts to either of these species are expected from the proposed HPM activities.

Inyo California Towhee. The proposed HPM tests would not be conducted in Inyo California towhee habitat and would thus not affect Inyo California towhee populations or their habitat. HPM systems are very unlikely to initiate range fires, which would lead to effects on Inyo California towhee habitat. Therefore, no significant impacts to Inyo California towhee are expected from the HPM activities associated with the Baseline Alternative/Updated No Action Alternative.

NAWSCL Special Status Plant and Wildlife Species. Considering the risk of HPM ignition of wild fires is beyond reasonable expectation. Considering this, no significant impacts to NAWSCL special status plant and wildlife species are expected from the proposed HPM activities. Additionally, NAWSCL special status species would continue to be managed by implementation of existing land use protocols, would continue to be given appropriate consideration during project planning efforts, and since impact avoidance and minimization measures would continue to be implemented to the extent practicable, impacts to these species should remain less than significant.

Wild Horses and Burros. Wild horses and burros are known to occur within and adjacent to areas where HPM weapons could be deployed at target or test site areas. There is a potential for HPM activities to impact wild horses and burros, by possibly causing burning. However, given the number of wild horses and burros on the Installation and frequency of HPM activities, the likelihood of significantly affecting any wild horses or burros is very low. Therefore, the ongoing HPM weapons testing would not have a significant impact on wild horses and burros on NAWSCL.

Other Federally Protected Wildlife Species. The NAWCWD ORD outlines a broad use of test and target areas that may potentially host EM activities (including HPM events) on NAWSCL. Based on the potentially broad applicability of HPM activities, a wide variety of MBTA-covered species are known to occur within and adjacent to areas where HPM weapons could be deployed at target or test site areas. While there is some potential for an individual animal to be affected by ongoing HPM use at these sites,

the likelihood of affecting any MBTA-covered species is very low, and would not be expected to affect the regional population viability of these species. Therefore, the HPM weapons testing associated with the Baseline Alternative/Updated No Action Alternative would not have a significant impact on MBTA-covered species.

Munitions Expenditures

Mohave Tui Chub. Under the Baseline Alternative/Updated No Action Alternative, there would be no increase in munitions expenditures at target and test sites. Mohave tui chub habitat is located away from military activities, and no impacts are expected.

Desert Tortoise. The desert tortoise and its habitat on NAWSCL are described above in the discussion of Range Ground Operations. Because most test and target sites are outside desert tortoise habitat, desert tortoise is not expected to nest, burrow, or forage within the target and test areas, but could occasionally transit through these areas.

Field surveys conducted in 1998 concluded that impacts outside of the designated buffer zones were infrequent (Tetra Tech 1999), and additional impacts beyond those analyzed in the existing desert tortoise BO are unlikely. The likelihood of a munitions expenditure impacting an individual desert tortoise transiting the area or in its burrow in the buffer zone is extremely low. Since desert tortoise and burrow densities on the North Range and in most portions of the South Range are low, impacts to desert tortoise are unlikely.

NAWSCL would continue to conduct munitions expenditure activities in accordance with the 2013 BO (8-8-12-F-29). Therefore, no significant impacts to desert tortoise from munitions expenditures are anticipated. Fire management is discussed at the end of this section (Section 4.4.3.1).

Southwestern Willow Flycatcher and Least Bell's Vireo. Under the Baseline Alternative/Updated No Action Alternative, munitions expenditures would not affect habitat potentially suitable for the southwestern willow flycatcher and the least Bell's vireo. The riparian areas represent potentially suitable habitat for the southwestern willow flycatcher and the least Bell's vireo. No target or test sites are located within riparian habitat potentially suitable for either the southwestern willow flycatcher or the least Bell's vireo, and therefore the majority of potential activities associated with munitions expenditures would not impact either species. However, wild fires associated with range activities can occur and are discussed at the end of this section (Section 4.4.3.1).

Inyo California Towhee. Under the Baseline Alternative/Updated No Action Alternative, munitions expenditures, which would not change from current activities, would not affect Inyo California towhee habitat because target and test sites are not located within towhee habitat. Therefore, no impacts would occur.

NAWSCL would continue implementing the measures in the Inyo California towhee Cooperative Management Agreement. These measures include the consideration and avoidance (to the maximum extent possible) of potential impacts during planning efforts, removal of feral burros and horses from the Inyo California towhee's range, fencing of springs and riparian tracts within towhee habitat, removing invasive plants, and towhee population monitoring within the limits of NAWSCL. In addition, NAWSCL would continue to conduct munitions expenditure activities in accordance with the 2013 BO (8-8-12-F-29) issued on February 19, 2013 (Appendix J). However, there is a potential that munitions expenditures could result in wild fires and this is discussed at the end of this section (Section 4.4.3.1).

NAWSCL Special Status Plant and Wildlife Species. The potential impacts to plant species from munitions expenditures would be similar to other mission impacts discussed previously.

Various NAWSCL special status wildlife species have been documented as occurring within some of the disturbance footprints at target or test site areas associated with the Baseline Alternative/Updated No Action Alternative, such as prairie falcon, LeConte's thrasher, the burrowing owl, and mammals such as the Mohave ground squirrel and Argus Mountain kangaroo rat, which may occur within the primary buffer zones of the target and test sites. NAWSCL special status species would continue to be managed by implementation of existing land use protocols, would continue to be given appropriate consideration during project planning efforts, and since impact avoidance and minimization measures would continue to be implemented to the extent practicable, impacts to these species should remain less than significant. Therefore, munitions expenditures under the Baseline Alternative/Updated No Action Alternative would continue to have no significant impacts on NAWSCL special status wildlife species.

Munitions expenditures at the playa lakes on NAWSCL would include the occasional use of surface-to-surface rockets, missiles, and bombs. Testing and training does not occur on the playa lakes, unless the playas are dry. When use of munitions does occur on the playa lakes, impacts are limited to the general impact and detonation area associated with the use of munitions. The occasional use of munitions at playa lakes, such as China Lake, is negligible, relative to the overall health of the population of the giant fairy shrimp and the playa ecosystem. Therefore, munitions use on NAWSCL has a low impact on biological resources within playas.

Wild Horses and Burros. The majority of the wild horses and burros on NAWSCL are located in the higher elevations of the Coso and Argus Mountains on the North Range. There is a potential for munitions expenditures to occur in areas where wild horses and burros occur. While there is a potential for wild horses and burros to occur in areas where munitions expenditures can occur, the likelihood of significantly affecting any wild horses or burros is very low, and would not result in a significant impact on the resource.

Other Federally Protected Wildlife Species. The MBTA-covered species that are not afforded additional protection under other regulations (e.g., ESA, or the "Eagle Act") that occur on NAWSCL are also known from suitable habitats in the vicinity of Ridgecrest, as well as within the general region, or are associated with habitats of limited distribution on NAWSCL, such as riparian areas, or have large territory requirements. Wild fire impacts to the majority of the MBTA-covered species would not result in significant adverse impacts to the species widely distributed within the region (the northwestern Mojave Desert), since those populations would be able to remain viable in the long-term. While there is some potential for these species to be affected by ongoing munitions use at these sites, the likelihood of significantly affecting any population of MBTA-species is low.

As previously discussed, wild fires associated with munitions activities on NAWSCL can occur. When a military-related wild fire does occur, vegetation supporting MBTA-covered species could be consumed by the fire. Fire management is discussed at the end of this section (Section 4.4.3.1).

Energetic Material Expenditures

Mohave Tui Chub. Energetic material expenditures at target and test sites under the Baseline Alternative/Updated No Action Alternative would not affect Mohave tui chub, since its habitat is located away from military activities.

Desert Tortoise. The desert tortoise and its habitat on NAWSCL were described above in the discussion of Range Ground Operations. Because most test and target sites are outside desert tortoise habitat, desert tortoise is not expected to nest, burrow, or forage within the target and test areas, but could occasionally transit through these areas.

Previous field surveys concluded that impacts outside of the designated buffer zones were infrequent, and that additional impacts beyond those analyzed in the existing desert tortoise BO are unlikely. The likelihood of an energetic material expenditure hitting an individual desert tortoise within the buffer zone is low. Since desert tortoise and burrow densities on the North Range and in most portions of the South Range are generally low, impacts to desert tortoise are unlikely.

NAWSCL would continue to conduct energetic material expenditure activities in accordance with the 2013 BO (8-8-12-F-29) issued on February 19, 2013 (Appendix J). There is a potential that energetic material expenditures could result in wild fires. Fire management is discussed at the end of this section (Section 4.4.3.1).

Southwestern Willow Flycatcher and Least Bell's Vireo. Under the Baseline Alternative/Updated No Action Alternative, energetic materials expenditures would not affect habitat potentially suitable for the southwestern willow flycatcher and the least Bell's vireo. However, there is a potential that energetic material expenditures could result in wild fires. Fire management is discussed at the end of this section (Section 4.4.3.1).

Inyo California Towhee. Under the Baseline Alternative/Updated No Action Alternative, energetic material expenditures would not affect Inyo California towhee habitat because target and test sites are not located within towhee habitat. However, there is a potential that energetic material expenditures could result in wild fires caused from the explosions associated with the use of rockets, flares, and other energetic material. NAWSCL would continue to conduct energetic material expenditure activities in accordance with the 2013 BO (8-8-12-F-29) issued on February 19, 2013 (Appendix J). There is a potential that energetic material expenditures could result in wild fires. Fire management is discussed at the end of this section (Section 4.4.3.1).

NAWSCL Special Status Plant and Wildlife Species. The potential impacts to NAWSCL special status plant and wildlife species from energetic material expenditures would be similar to other mission impacts discussed previously. While there is some potential for an individual animal to be affected by ongoing energetic material use at these sites, the likelihood of significantly affecting any NAWSCL special status species is considered to be low. Additionally, NAWSCL special status species would continue to be managed by implementation of existing land use protocols, would continue to be given appropriate consideration during project planning efforts, and since impact avoidance and minimization measures would continue to be implemented to the extent practicable, impacts to these species should remain less than significant. Therefore, energetic material expenditures under the Baseline Alternative/Updated No Action Alternative would continue to have no significant impact on NAWSCL special status wildlife species.

Energetic expenditures at the playa lakes on NAWSCL would include the occasional use of energetic materials described above. Testing and training does not occur on the playa lakes, unless the playas are dry. When use of energetic materials does occur on the playa lakes, impacts are limited to the general detonation area associated with the use of such materials. The occasional use of energetic materials at playa lakes, such as China Lake, is negligible, relative to the overall health of the population of the giant fairy shrimp and the playa ecosystem. Therefore, munitions use on NAWSCL has a low impact on biological resources within playas.

Wild Horses and Burros. The majority of the wild horses and burros on NAWSCL are located in the higher elevations of the Coso and Argus Mountains on the North Range. There is a potential for energetics material expenditures to occur in areas where wild horses and burros occur. However, NAWSCL has implemented feral horse and burro management strategies in the INRMP to manage and maintain the wild horse and burro populations in a humane manner. While there is a potential for wild horses and

burros to occur in areas where energetic material expenditures can occur, the likelihood of significantly affecting any wild horses or burros is very low, and would not result in a significant impact on the resource.

Other Federally Protected Wildlife Species. The potential impacts to MBTA-covered species from energetic material expenditures under the Baseline Alternative/Updated No Action Alternative would be similar to the impacts previously discussed for the Proposed Action.

The MBTA-covered species that are not afforded additional protection under other regulations that occur on NAWSCL are also known from suitable habitats in the vicinity of Ridgecrest, as well as within the general region, or are associated with habitats of limited distribution on NAWSCL, such as riparian areas, or have large territory requirements. Wild fire impacts to the majority of the MBTA-covered species would not result in significant adverse impacts to the species widely distributed within the region (the northwestern Mojave Desert), since those populations would be able to remain viable in the long-term. As previously discussed, wild fires associated with energetic materials expenditures on NAWSCL can occur. When a military-related wild fire does occur, vegetation supporting MBTA-covered species could be consumed by the fire. Fire management is discussed at the end of this section (Section 4.4.3.1).

Nonmilitary Uses

Under the Baseline Alternative/Updated No Action Alternative, existing Native American, research and education, and recreational activities would continue at NAWSCL. Proposed nonmilitary uses falling into these general categories would continue to be considered on a case-by-case basis.

Native American Use

Native American access to the Coso Hot Springs and Prayer Site, pinyon nut harvesting, and visitations to old homesteads would continue at current levels and be conducted in accordance with the existing MOA. Native American traditional practices would not affect federally protected species, critical habitats, or NAWSCL special status species/habitat. Therefore, current access for Native American activities would have no effect on these biological resources.

Geothermal

The KGRA is located in the Coso Geothermal LMU, which encompasses 153,600 acres (62,160 hectares). Four power plants operate on this land area. No changes to geothermal operations are proposed under the Baseline Alternative/Updated No Action Alternative, and no changes would be anticipated with respect to the nature and overall scope of current operations apart from routine and recurring activities (e.g., potential shutting down of existing wells or opening of new wells within approximately the current production area).There are tortoises documented within the eastern portion of the KGRA, with estimated densities ranging from 0 to 5 tortoises per square mile to the east and west of Sugarloaf Mountain (Kiva Biological Consulting and Epsilon Systems Solutions 2004). Therefore, ongoing activities have the potential to impact the tortoise. However, since geothermal operations are not expected to change, impacts to the tortoise are likely to remain very low (potential take due to vehicle access). Federally protected and NAWSCL special status species potentially impacted include Mohave ground squirrel, and burrowing owl. Impacts to these species would be expected to be low, for similar reasons as discussed for the tortoise.

Research and Education

Scientific research conducted at NAWSCL by volunteers and professionals has included vegetation studies, and surveys for rare plants, invertebrates, slender salamanders and other amphibian species, reptiles, chukar, mountain quail, shrews, bats, and small mammals. Because requests for access for research and education activities undergo environmental review prior to approval, potential conflicts with federally listed or protected species, critical habitat, and NAWSCL special status species/habitat are

identified and avoided or mitigated to ensure no significant impacts occur. Research focusing on wildlife species or habitats provides data useful in managing those resources and, thus, represents a beneficial impact to biological resource management.

Recreation

Camping. Camping occurs on a limited basis in the Argus Range in the existing campsite area at Birchum Springs. The camping area is located in an upland Joshua tree woodland zone that is Inyo California towhee habitat. The Birchum Springs camping area was clearly identified by existing facilities, including parking areas and prepared campsites, before being consumed by fire. This camping area was most often used on the weekends by Installation employees for recreation and by contractor field personnel as a convenient overnight location while conducting natural or cultural resources surveys for NAWSCL EMD. Historically, limited recreation activities such as hiking and bird watching have been permitted at this site. However, the site does not currently support camping activities since a range fire consumed the campground a few years ago. Participants received the Installation's standard environmental awareness briefings developed to prevent impacts to biological resources. Over the years of use, no resource damage or adverse impacts to protected species or habitat have been reported to or observed by NAWSCL staff as a result of camping activities. Re-establishment and use of the site for camping would not adversely affect federally protected species, critical habitats, or NAWSCL special status species/habitats. Therefore, no significant impacts on biological resources would be anticipated.

Golf and Gym Access. Continued public access to the golf course and gymnasium at Mainsite would not affect federally protected species, critical habitats, or NAWSCL special status species/habitats because access to these developed areas is along existing paved roads. In addition, these areas are outside of the boundaries of desert tortoise, Mohave tui chub, and Inyo California towhee habitats. Use of the Installation's gym and golf course facilities would have no effect on federally protected species, critical habitats, or NAWSCL special status species/habitats.

Hiking. Hiking is permitted on existing roads and trails, and is generally performed by personnel with authorized access to the North Range areas. Hiking would have no effect on federally protected species, critical habitat, or NAWSCL special status species/habitat.

Equestrian Use. The area currently used for equestrian activities has been extensively disturbed by developments that were previously located in this area. While the area is near low-density desert tortoise habitat (i.e., 0 to 20 tortoises per square mile), it is also adjacent to rural housing areas. The existing trail, which is on unimproved dirt roadways, is not considered viable desert tortoise habitat. While the likelihood of a desert tortoise being on the trail is fairly remote, equestrians can easily avoid tortoises along the trails. The current use of this area for equestrian activities would not change and is considered to have no significant impact on biological resources.

Off-Road Vehicle Use. ORV use is restricted to two locations on-installation: Mirror Lake (for land-sailing vehicles) and a perpendicular crossing of the existing roadway to the South Range, Randsburg Wash Road (for off-road motorcyclists). Land-sailing activities do not occur in desert tortoise habitat and, therefore, have no effect on desert tortoise or its habitat. The playa dry lakebed at Mirror Lake does contain the giant fairy shrimp, a NAWSCL special status species. Use of this lakebed could affect the giant fairy shrimp. However, land-sail vehicles are lightweight and have minimal effect on the lakebed surface, which is very hard and not used when wet. Tow vehicles and trailers accessing the lakebed to unload the sail vehicles are heavier but also have little effect on the dense lakebed surface. Additionally, there is a model airplane use area on Satellite Lake; this activity has little effect on the lakebed surface. Therefore, current ORV use would have no significant impact on biological resources.

Authorized off-road motorcycle activities are restricted to a limited area of Randsburg Wash Road. Habitat in the area that crosses Randsburg Wash Road is moderately disturbed and is adjacent to a BLM open area where ORV activities are authorized. Although BLM approves specific events that authorize access to this road crossing, the area remains open to unauthorized access. The public routinely accesses the area along the DoN's umbilical road that connects the North Range and the South Range. The unregulated access likely results in OHV impacts on NAWSCL withdrawn lands. While authorized off-road motorcycles could crush desert tortoise that may be in the area, the likelihood of this occurring is very low.

Petroglyph Tours. Petroglyph tours are conducted in the Little Petroglyph Canyon area of the Coso Range. This general area may contain NAWSCL special status plant species; however, tours are conducted in accordance with established procedures and are supervised by guides trained and certified by NAWSCL personnel. The number of visitors is controlled, visitors are limited to existing roads and trails, and collecting or damaging vegetation or harming wildlife is not allowed. Petroglyph tours provide visitors opportunities to witness the extraordinary environmental resources of the Installation, and, thus, represent a beneficial impact.

Bird Watching. The Audubon Society's annual bird counts would continue to be held at Mainsite and the George Range. In addition, avian surveys would continue at the wastewater treatment facility. These activities are permitted throughout designated areas, and participants are required to access these areas on foot. Vehicular travel is restricted to existing roads and disturbed areas. Data gathered during these bird counts are provided to NAWSCL and are used to support management efforts to conserve and protect the Installation's natural resources. Since these activities do not adversely affect federally protected species, critical habitats, or NAWSCL special status species/habitat, and since they serve to generate useful data, bird watching activities are considered a beneficial impact.

Photography. Requests for photographic activities are considered by the Installation's Commanding Officer on a case-by-case basis. Participants in authorized photographic activities are provided appropriate safety, security and environmental briefings. As such, these activities have no effect on federally protected species, critical habitats, or NAWSCL special status species/habitats.

CLUMP Revision and Implementation

Under the Baseline Alternative/Updated No Action Alternative, NAWSCL would revise the 2005 CLUMP and implement the revised CLUMP. The CLUMP incorporates established standard procedures for avoidance and minimization of impacts to environmental resources. By implementing the CLUMP, most projects would be sited in existing disturbed areas, thereby avoiding potential impacts to environmental resources. Potential impacts from a project could potentially be minimized by relocating the project to a previously disturbed area that is sufficiently similar to the area initially proposed for the project, or by reconfiguring the area boundary to avoid a sensitive resource. When new undisturbed areas would be required to support a project, environmental personnel work with project planners and range users to ensure that the project affects the smallest area possible. Potential impacts to undisturbed lands from new or ongoing projects would be further minimized through environmental briefings to range users and range operations personnel, and by restricting vehicular traffic to established roads and other established disturbed areas. Environmental briefings provide range users and operators with updated information on the types of sensitive resources found on the ranges, specific areas to be avoided, and reporting methods to follow in the event a sensitive resource is inadvertently impacted by an activity. Off-road traffic is permitted only for specific purposes such as munitions or test item recovery and maintenance activities and is coordinated with EMD and Range safety personnel. Impacts to sensitive resources would be further minimized through compliance with the provisions of USFWS BOs, and any additional coordination required, such as agency discussions potentially associated with utilization of the MBTA military readiness waiver.

Fire Management

The potential fire impact of the Baseline Alternative/Updated No Action Alternative would be similar to the impacts described for the Proposed Action but without the 25 percent increase in RDAT&E activities. The fire impacts would be the same as the current conditions. Wild fires can result in individual mortality and the loss of habitat. Desert scrub vegetation is slow to fully recover from fire impacts, with loss of species diversity (including shrub species associated with desert tortoise, such as creosote) potentially being depressed for over 20 years following a fire (Steers and Allen 2011).

NAWSCL would continue implementing the strict risk assessment, safety policies, and associated management requirements that minimize, to the extent practicable, the chance for an accident or mishap that could result in a fire. NAWSCL would implement the fire management measures outlined in Section 3.4.10 Fire Management and included in the 2013 BO (8-8-12-F-29). The China Lake Federal Fire Department would continue to maintain its existing mutual aid fire-fighting agreements with other agencies (BLM, USFS, and County of San Bernardino) and continue to pursue the establishment of new mutual aid agreements. The DoN would use adaptive fire management measures as a framework that recognizes biological uncertainty, while accepting a mandate to proceed on the basis of the best available scientific knowledge. The DoN's goal is to contain all fires, while maintaining operational requirements, and safety and security of range personnel.

This section will address the potential impacts from wild fires resulting from the Baseline Alternative/Updated No Action Alternative on key species and resources.

Mohave Tui Chub. Fires caused by RDAT&E activities would not likely impact the Mohave Tui Chub since its habitat is not located near the target and test areas.

Desert Tortoise. There is a potential threat of wild fires impacting the desert tortoise and its associated habitat. Although the safety protocols, regulations, requirements, and SOPs implemented by NAWSCL would reduce the impacts of wild fires and would help fire suppression activities to contain a fire, the potential risk of fire to the desert tortoise under the Baseline Alternative/Updated No Action Alternative would potentially remain a significant impact. NAWSCL would conduct RDAT&E activities in accordance with the 2013 BO (8-8-12-F-29).

Southwestern Willow Flycatcher and Least Bell's Vireo. Wild fires could result in the loss of riparian vegetation potentially suitable for the flycatcher and vireo. However, fires associated with range operations within riparian vegetation have been extremely rare on NAWSCL. To reduce the effects of fire on the flycatcher and vireo under the Baseline Alternative/Updated No Action Alternative, NAWSCL would continue to implement the Installation's fire management measures. Considering the rarity of wild fires in riparian habitats associated with RDAT&E activities, the narrow window of time when flycatchers or vireos would potentially be on NAWSCL, and the fire containment measures to be implemented by the Installation, impacts from wild fires to these species are not expected to be significant. In the event that the DoN needs to respond to a wild fire that may affect these federally listed species, the DoN would request emergency consultation, pursuant to the implementing regulations for Section 7(a)(2) of the ESA (5 CFR 402.02).

Inyo California Towhee. Wild fires could result in the loss of suitable Inyo California Towhee habitat. To reduce the effects of fire on the towhee under the Baseline Alternative/Updated No Action Alternative, NAWSCL would continue to implement the Installation's fire management measures. Considering the rarity of wild fires in towhee habitat associated with RDAT&E activities and the fire containment measures, impacts from wild fires to this species would not be expected to be significant. In the event that the DoN needs to respond to a wild fire that may affect this federally listed species, the DoN would

request emergency consultation, pursuant to the implementing regulations for Section 7(a)(2) of the ESA (5 CFR 402.02).

NAWSCL Special Status Plants and Wildlife Species. The potential impacts to sensitive plant and wildlife species that may be in or near the affected area would not change under the Baseline Alternative/Updated No Action Alternative. These impacts are not considered to be significant.

Other Federally Protected Wildlife Species. Wild fires associated with testing and training activities on NAWSCL could occur under the Baseline Alternative/Updated No Action Alternative. When a military-related wild fire does occur, vegetation supporting MBTA-covered species could be consumed by the fire. During the majority of the year (i.e., the non-breeding season), birds can avoid injury or death from wild fires by flying to unaffected adjacent habitat, with the residual impact to species being displacement due to loss of habitat. Wild fires during the nesting season (typically from mid-May through mid-September), have the potential to result in loss of birds at active nests. Wild fire impacts to the majority of the MBTA-covered species would not result in significant adverse impacts to the species widely distributed within the region (the northwestern Mojave Desert), since those populations would be able to remain viable in the long-term. If NAWSCL determines that the effects of a wild fire, due to munitions/target use, or target construction/demolition, may be significantly adverse to a particular population of an MBTA-covered species, then the Installation would be required to confer with USFWS to develop conservation measures to mitigate the impacts.

Potential impacts of wild fires on MBTA-covered species would require NAWSCL to analyze potential adverse effects at the population level, in order to determine whether the activity in question fits within the military readiness waiver. If NAWSCL determines that the effects of a wild fire, due to munitions/target use, or target construction/demolition, may be significantly adverse to a particular population of an MBTA-covered species, then the Installation would be required to confer with USFWS to develop conservation measures to mitigate the impacts.

Cumulative Impacts

Cumulative impacts anticipated under the Baseline Alternative/Updated No Action Alternative would be similar to the likely cumulative impacts associated with the Proposed Action, only to a somewhat lesser extent or intensity, insofar as NAWSCL's cumulative impacts would be expected to be somewhat lower under the Baseline Alternative/Updated No Action Alternative because this alternative would not include the potential increase in RDAT&E and training activities.

The cumulative projects identified for the NAWSCL area are not expected to have any significant cumulative biological resources impacts in conjunction with the Baseline Alternative/Updated No Action Alternative. This alternative would not result in any changes to existing impacts to biological resources at NAWSCL. Impacts from on-installation construction projects (e.g., new school construction) would be reduced by following the INRMP, as well as conservation measures developed through any necessary Section 7 consultations, and would not result in significant impacts. Biological resources impacts from off-installation development projects in the region either would be localized and/or would affect areas a considerable distance from NAWSCL, which makes it less likely that such projects would contribute in any appreciable way to significant cumulative biological resources impacts in conjunction with the Baseline Alternative/Updated No Action Alternative.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative impacts to biological resources as it relates to other military land withdrawal actions in the region.

Potential biological resources impacts from development projects in the region either would be localized, would affect areas appreciably distant from NAWSCL, and/or would not be likely to rise to a level having the potential to have appreciable cumulatively significant impacts. Consequently, no significant cumulative biological resources impacts are anticipated.

4.4.3.2 Mitigation Measures and Impact Avoidance and Minimization Measures

Mitigation measures and impact avoidance and minimization measures for impacts to biological resources would be similar to those described under the Proposed Action (see Section 4.4.2.2).

4.4.3.3 Summary of Impacts

Since the land withdrawal is a renewal of a previously approved land withdrawal, it, in itself, would not have any direct or indirect impact on management of federally protected or NAWSCL special status species on the Installation. However, the renewal would allow both continuing and new activities at NAWSCL that would result in impacts.

NAWSCL has prepared a BA, completed a Section 7 consultation with USFWS, and received a final BO from the USFWS on February 19, 2013 to address potential impacts to the federally listed threatened and endangered species that occur on the Installation: the Mohave tui chub, desert tortoise, southwestern willow flycatcher, least Bell's vireo, and Inyo California towhee. The 2013 BO outlines conservation measures to reduce the effects of the project on these threatened and endangered species.

Biological resources would continue to be managed through implementation of the INRMP and the CLUMP. Current and foreseeable military activities would avoid Mohave tui chub, southwestern willow flycatcher, least Bell's vireo, and Inyo California towhee habitats; therefore, impacts associated with the Baseline Alternative/Updated No Action Alternative would be considered less than significant. However, if any future need arises where any military activities (e.g., training, construction, etc.) would result in impacts to these species habitat, the activities would be reviewed by EMD on a case-by-case basis—to include potential further consultation with USFWS—and impacts would be minimized to the extent feasible.

Since many of the current military activities on NAWSCL under the Baseline Alternative/Updated No Action Alternative would occur within desert tortoise habitat, there would be appreciable impacts to the species. However, impacts from military testing and training would typically be confined to existing travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, and instrumentation sites where densities of federally protected species would be expected to be low or non-existent. However, given the historical rates of unintended wild fires resulting from range activities, there would be at least potentially significant impacts to desert tortoises.

The Baseline Alternative/Updated No Action Alternative would also impact NAWSCL special status plant and animal species, MBTA-covered species, as well as non-sensitive plant and animal species. However, military impacts are generally confined to previously disturbed areas, where population densities would be expected to be relatively low. NAWSCL special status plant and animal species, MBTA-covered species, and non-sensitive plant and animal species, are generally widely distributed within suitable habitats across NAWSCL. Additionally, NAWSCL special status species would continue to be managed by implementation of existing land use protocols, would continue to be given appropriate consideration during project planning efforts, and impact avoidance and minimization measures would continue to be implemented to the extent practicable. Therefore, military impacts to NAWSCL special status species, MBTA-covered species, and non-special status species are not considered significant.

Nonmilitary uses would follow the management guidelines outlined in the INRMP. Therefore, nonmilitary uses would not adversely affect the Installation's biological resources. The CLUMP would formalize and integrate the Installation's environmental planning and review processes, and would formalize the standard procedures for impact avoidance and mitigation, which would represent a beneficial impact.

NAWSCL would continue to remove excess numbers of horses and burros from both the North and South Ranges. The WHBMP would allow for enhanced management techniques including use of contraceptives, an attempt to place animals into long-term holding facilities; and placement with other organizations, humane groups, Native American tribes, etc. Adopting individuals or groups would still be required to meet BLM adoption guidelines to ensure that they have the ability to properly care for animals and to ensure animals are not acquired simply to dispose of them for profit. Eliminating burros would protect tortoise and other habitats on both the North and South Ranges, would preclude additional burro impacts in towhee habitats, would allow for more rapid forage recovery, and would benefit the wild horse herd by removing competition for resources. Continued management in accordance with the WHBMP would have a beneficial effect on the respective herds as well as natural resources generally.

Due to mission necessity and safety considerations, NAWSCL has determined that the use of hot spotting charges would increase in frequency, to facilitate in the location and recovery of spent munitions. The increased use of hot spotting charges may result in an increase in the number of range fires. Fire-fighting personnel are no longer stationed on the South Range, leading to an increase in fire response time and the possibility for larger areas of vegetation that may be burned. NAWSCL has proposed measures to mitigate the potential increase in the number and extent of range fires by revising the Installation's fire management strategy (see Section 3.4.11). The primary changes in the strategy include an improved process for clearing of UXO and vegetation at target sites in the Superior Valley, the establishment of fire breaks and access roads around target buffers to facilitate more direct access to fires within the Superior Valley Critical Habitat, and controlling the spread and establishment of invasive weed species (thereby decreasing fire fuel loads). NAWSCL would continue to maintain existing mutual aid fire-fighting agreements with federal, state, and local agencies. NAWSCL will continue to pursue the establishment of new mutual aid agreements, whenever possible.

Because RDAT&E activities would continue, current biological resource management practices would remain in place. For activities not addressed under prior Section 7 consultations, NAWSCL has completed an ESA Section 7 consultation with USFWS, and on February 9, 2013, received a BO (8-8-12-F-29) (Appendix J) outlining mitigations and conservation measures that would be implemented to avoid jeopardy of the covered species, and avoid or minimize adverse modification to critical habitat of those species. Notwithstanding that the majority of DoN activities at NAWSCL likely would not have the potential to result in significant impacts, the potential for wild fires generated by range activities—in conjunction with historical information as to the number of fires and the inherent uncertainty associated with the number and extent of fire events—indicates the Baseline Alternative/Updated No Action Alternative has the potential to result in significant impacts to the desert tortoise. Accordingly, the Baseline Alternative/Updated No Action Alternative in total would have significant impacts by itself, and therefore would have significant cumulative impacts in combination with other cumulative projects discussed in Section 4.4 herein and summarized in Table 4.4-3.

4.4.4 No Action Alternative (Alternative 3)

Because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of "no action" conditions at NAWSCL; therefore, the discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed (please see discussion in Section 2.3.3). For the purposes of the

Final EIS/LEIS, the Baseline Alternative/Updated No Action Alternative is considered to effectively represent “no action” conditions or status quo (see Section 4.4.3).

Table 4.4-3
Baseline Alternative/Updated No Action Alternative (Alternative 2) - Summary of Biological Resources Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures
(Page 1 of 3)

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses – Range and Airfield Flight Events	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses – Range Ground Events	
Potentially significant impacts to desert tortoise associated with wildland range fires.	*Mitigation Measures* • Continue the control of wild horses and feral burro populations on NAWSCL. • Continue the control of invasive species to reduce degradation of plant and wildlife habitats, and to reduce the frequency of wild fires on NAWSCL. • Implement provisions stipulated in the most current and applicable BOs (see discussion of BOs in Section 3.4.3.1 and desert tortoise BO in Appendix J). • Implement provisions of the approved INRMP and successor documents to: 1. protect and conserve resources occurring throughout the NAWSCL landscape, 2. continue management of wild horses and feral burro populations and invasive species to reduce degradation of plant and wildlife habitats and reduce the fuel loads influencing the frequency and intensity of wild fires, and 3. facilitate the execution of current and evolving military mission requirements. *Impact Avoidance and Minimization Measures* • Continue to conduct focused plant and animal species surveys across the entirety of NAWSCL. Compile these biological data into GIS to document current distribution and density of the NAWSCL federally listed and special status species. Compilation of these data would establish resource baselines and allow natural resources managers to monitor and detect when a particular special status species, or its habitat, may be in decline. If a decline in overall species numbers is detected, or if there is a reduction in habitat quality and area, then additional and focused management steps would be implemented to curtail and reduce future impacts on those particular species or habitats. Compilation of an integrated natural resources database also facilitates project planning and approval processes in support of current and evolving mission requirements. • Continue avian surveys and monitoring in accordance with applicable requirements (e.g., MBTA [and Military Readiness Rule], Bald and Golden Eagle Protection Act, etc.) and management plans (e.g., INRMP and CLUMP) in areas that provide suitable perching and nesting habitat for federally protected bird species that have the potential to be adversely affected by activities conducted at NAWSCL. For instances where a federally protected avian species may be at risk from a planned activity, project personnel and EMD would work cooperatively to implement appropriate impact avoidance and minimization measures as operational conditions permit. • Continue the effective application of project and activity review and approval processes (NAWSCL NEPA Instruction and NAWSCL Site Approval Process) and promote the adaptive reuse of existing operational assets to minimize potential effects to biological resources and the need for new project construction.

Table 4.4-3
Baseline Alternative/Updated No Action Alternative (Alternative 2) - Summary of Biological Resources Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures
(Page 2 of 3)

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Military Uses – Range Ground Events (Continued)	
	Increase the level of decision quality information available for use in project planning processes to support mission compatible avoidance or minimization measures and achieving natural resources management goals and objectives. Information collected and catalogued on natural resources would be coordinated with applicable stakeholders. Surveys and monitoring would continue to be conducted on a non-interference basis with military operations.
Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Wild Horse and Burro Management Impacts	
Continuation of current management practices with respect to wild horses and burros would have a positive effect on the respective herds as well as natural resources generally. The INRMP update (and Wild Horse and Burro Management Program) would enhance these positive effects.	*Mitigation Measures* Continue the control of wild horses and feral burros on NAWSCL to better protect natural resources, such as riparian habitats associated with the Inyo California towhee. *Impact Avoidance and Minimization Measures* No impact avoidance and minimization measures.
Fire Management Impacts	
Potentially significant impacts associated with the increased use of hot spotting charges in order to optimize safety, and to facilitate the tracking and retrieval of munitions. Potentially significant impact associated with the removal of fire-fighting personnel from the South Range, increasing the fire response time.	*Mitigation Measures* Continue the control of invasive species to reduce degradation of plant and wildlife habitats, and to reduce the frequency of wild fires on NAWSCL. *Impact Avoidance and Minimization Measures* Continue to evaluate and enhance fire management measures on NAWSCL, particularly for areas where wild fires have historically been difficult to control. Conduct post-event biological surveys in accordance with the 2013 BO to assess the potential effect to natural resources from military activities when fires leave the target area and enter adjoining critical habitat and document the date, time, location, cause, and acreage of the fire. Fires would be mapped using GPS and plotted in GIS. In desert tortoise habitat, post-fire surveys would include focused surveys to determine whether any desert tortoises have been injured or killed. The DoN would conduct the surveys in accordance with the desert tortoise pre-project survey guidelines (http://www.fws.gov/ventura/species_information/protocols_guidelines/index.html) and include the results in its annual report to USFWS. An authorized biologist would lead the surveys. Post-fire surveys would be limited to an annual cumulative acreage of 2,000 acres (1,000 acres in desert tortoise critical habitat and 1,000 acres outside of desert tortoise critical habitat). The 2,000-acre limit is due to the practicality and logistical feasibility of conducting timely surveys over an area larger than 1,000 acres in both areas. In the instance of an unforeseen fire that exceeds this acreage, the DoN would consult with USFWS as soon as possible.
Cumulative Impacts	
Significant impacts.	Mitigation measures addressed above. Impact avoidance and minimization measures addressed above.

Table 4.4-3
Baseline Alternative/Updated No Action Alternative (Alternative 2) - Summary of Biological Resources Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures
(Page 3 of 3)

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Overall Summary	
Implementation of the proposed mitigation measures would reduce the overall impact to less than significant.	Mitigation measures addressed above. Impact avoidance and minimization measures addressed above.

This page intentionally left blank.

4.5 CULTURAL AND PALEONTOLOGICAL RESOURCES

This section identifies potential impacts to cultural or paleontological resources that may result from the implementation of each of the alternatives at NAWSCL. A full description of each of these alternatives is provided in Section 2.3.2.1. Factors considered in determining whether an alternative would have significant impacts on cultural resources include the extent or degree to which an action would affect the qualities that make a resource significant or eligible for the National Register. Each of the alternatives was analyzed to identify those actions that could affect cultural or paleontological resources at NAWSCL. Military uses such as range flight events and airfield flight events conducted in the airspace above NAWSCL are addressed only for cultural resources that are significant for qualities other than data potential. DE activities would have no effect on cultural or paleontological resources.

4.5.1 Approach to Analysis

Information for the analysis regarding cultural resources and historic properties at NAWSCL was obtained from a number of existing sources, which are discussed in detail in Chapter 3.5. This analysis considers impacts to cultural resources and paleontological resources under NEPA and corresponding CEQ regulations, and effects to historic properties under Section 106 of the NHPA and its implementing regulations (36 CFR § 800). When determining significance of impacts under NEPA, an agency must consider the unique characteristics of the geographic area, including proximity to historic or cultural resources (40 CFR §1508.27 (b)(3)), and the degree that the action may affect cultural resources eligibility for listing in the National Register of Historic Places (40 CFR §1508.27 (b)(8)). Significance of impacts under NEPA would be addressed through application of the Section 106 adverse effect criteria (36 CFR 800.5).

Section 106 requires federal agencies to take into account the effects of their undertakings on historic properties and afford the ACHP and other interested parties a reasonable opportunity to comment on such undertakings. Under Section 106, the Agency Official identifies historic properties within the area of potential effects, and assesses and resolves potential adverse effects (avoid, minimize, or mitigate the adverse effects on historic properties) in consultation with consulting parties (SHPO/Tribal Historic Preservation Office, Native American tribes, and other interested individuals or organizations). Historic properties are those that meet the criteria for inclusion in the National Register as specified in 36 CFR § 60.

Effects are assessed with respect to an undertaking's potential to diminish the integrity of a historic property's location, design, setting, materials, workmanship, feeling, or association (36 CFR § 800.5). Impacts to historic properties include physical destruction, damage, or alteration of all or part of the property; isolation of the property or alteration of the character of the property's setting when that character contributes to the property's qualifications for the National Register; introduction of visual, audible, or atmospheric elements that are out of character with the property or changes that may alter its setting; neglect of a property resulting in its deterioration or destruction; or transfer, lease, or sale of a property without adequate provisions to protect its historic integrity. The DoN's Section 106 compliance would be conducted under the ICRMP, prepared by NAWSCL in consultation with the SHPO, and its implementing PA. As discussed in section 3.5.4.1, the ICRMP was implemented in 2012. The ICRMP presents the procedures for the management and protection of cultural resources at NAWSCL, and consultation processes, cultural resources management priorities, and management procedures for ongoing identification and conservation of cultural resources. NAWSCL initiated the Section 106 consultation for the development of this LEIS/EIS on March 9, 2012 (see Appendix H).

The APE for addressing potential impacts/effects to historic properties encompasses the entire Installation. Target and test areas, which were established at NAWSCL before environmental protection laws were enacted, have received intensive use over the past nearly 70 years. Through this repeated, long-standing use, the targets and test areas have been subject to extensive ground disturbance. Some target areas contain sites that have been determined eligible for the National Register or that have not been evaluated (Duran and Johnson 2010; Hildebrandt and Jones 1997). Some target and test areas have been excluded from further study based on the potential hazard posed to human health.

As discussed in Section 3.5.2.1, TCPs are areas of special heritage value to contemporary communities (Parker and King 1990). Effects to Native American TCPs are considered significant if the action could substantially alter the value of sacred or traditional activity areas important to Native Americans or could reduce access to such areas. Identification of properties that are important to Native Americans is an ongoing activity at NAWSCL. NAWSCL continues to employ established protocols addressing Native American burial sites through consultation.

Paleontological resources are addressed through the Installation's existing operating procedures for the environmental review process, as identified in the ICRMP, and through implementation of protocols for the assessment and mitigation of potential effects. It is anticipated that protocols for paleontological resources would be developed by the DoN and included in updates to the ICRMP. Prior to the development of such protocols, treatment of paleontological resources at NAWSCL would be conducted consistent with currently established evaluation criteria and mitigation measures by professional organizations and agencies, including the Society of Vertebrate Paleontology (SVP 1995, 1996) as discussed in the ICRMP, and the BLM (BLM 2008). NAWSCL continues to conduct paleoenvironmental studies and inventories for the identification and classification of fossil localities at the Installation.

4.5.2 Proposed Action (Alternative 1)

The Proposed Action involves Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013); revision and implementation of the CLUMP; and accommodation of an increase in RDAT&E and training activities of up to 25 percent, expansion of unmanned aerial and surface systems, and expansion of existing and introduction of evolving DE weapons development. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised and implemented to manage land use and environmental resources.

4.5.2.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. Approximately *5* percent of the lands currently contained within the Installation boundary are subject to mission impact. The majority of lands are maintained as a safety buffer and are not subjected to the same intensive use (pressures) found on lands managed for military use. A renewal of the land withdrawal would allow for continued restricted access to the withdrawn lands, which provides protection to cultural resources from unauthorized activity. The land withdrawal would therefore have a beneficial effect to cultural resources, and the ICRMP would address any potential adverse effects to historic properties and impacts to cultural resources. The analysis for potential impacts to cultural resources from military and non-military uses is presented in the subsections below.

Military Uses

Range Flight Events

The higher level of use of the airfield under the Proposed Action would potentially result in increased need for maintenance and repair on the Armitage Airfield National Register-eligible BSOs. Vibrations from

noise may also affect historic structures, or elements of historic structures that lack the flexibility to accommodate abnormal movement. Examples of these vulnerable aspects of historic structures are structural weak points, and plaster walls and ceilings (Randl 2001). The BSOs associated with Armitage Airfield have been inventoried, and four have been identified as eligible for the National Register (see Section 3.5.6.1). Maintenance and repair of BSOs would be conducted in accordance with the NAWSCL historic preservation guidelines (Mikesell 1997), which follow the Secretary of the Interior's Standards for the Treatment of Historic Properties. The Secretary of the Interior's publication provides standards and guidelines for alterations and use so as not to affect characteristic-defining features or alter the historic integrity of a building. By following these guidelines, no adverse effects would occur to historic properties, and no significant impacts would occur to cultural resources.

Range flight events may potentially affect areas visited by Native Americans on NAWSCL for ceremonial purposes or traditional activities such as pinyon pine nut gathering. The "feeling" of these areas could be altered by airflight traffic in their vicinity, either visually or through noise. However, Native American access to these areas is granted outside of periods of active range use. Therefore, proposed range flight events would have no effect on historic properties, and potential impacts to cultural resources would not be significant.

Smaller ground-launched UAS (Groups 1-3) would be launched and recovered from disturbed areas, including targets, paved roads, and dirt roads. Disturbed areas may contain subsurface intact cultural deposits that could be affected by these activities. Inadvertent impacts could occur to target and test area buffers. Potential adverse effects to historic properties may be avoided or minimized by implementation of the measures proposed in Section 4.5.2.2. Potential impacts to cultural or paleontological resources would be less than significant.

Airfield Flight Events

Airfield flight events would continue to originate from Armitage Airfield and would increase by up to 25 percent. As discussed above, inflight events and increased use of Armitage Airfield would have no adverse effects on historic properties, and potential impacts to cultural resources would not be significant based on the maintenance of National Register-eligible BSOs in accordance with the NAWSCL historic preservation guidelines. Airfield flight events may also potentially affect the feeling of areas visited by Native Americans for traditional or ceremonial purposes. However, Native American access to these areas is granted outside of periods of active range use. Therefore, proposed range flight events would have no adverse effects to historic properties, and potential impacts to cultural resources would not be significant.

Airfield flight events are unlikely to disturb the subsurface geologic units that contain paleontological resources. Therefore, proposed airfield flight events would have no impacts to paleontological resources.

Range Ground Events

Target and test site use would also increase by up to 25 percent. Most range ground activities occur in the North Range. Use of underutilized targets and test areas could be resumed in the North and South Ranges, and test area buffers would be established. Many targets within NAWSCL have not been fully investigated for cultural resources. As described in 4.5.1, target areas have been subject to heavy bombardment for several years, and the integrity of many resources within these areas are most likely compromised, although some target areas are known to contain National Register-eligible or unevaluated resources (see also Section 4.5.1). Use of existing targets, target areas, monitoring stations, photographic stations, and bladed roads located within the boundaries of historic properties shall be considered a no adverse effect (36 CFR 800.5(b)) when activities conducted within their boundaries are consistent with current and historic use and there is no potential to increase disturbance.

Buffer zones receive impacts associated with use of target and test areas, including weapons impacts and camera and monitoring equipment placement. Survey of target and test site buffers are expected to be completed in fiscal year 2018. As discussed in Section 3.5.5, currently, nearly 71 percent of the North Range and approximately 93 percent of the South Range target and test area buffers have been investigated for cultural resources. Approximately 29 percent of the North Range buffers and 7 percent of the South Range buffers have not been surveyed. Numerous prehistoric and historic archaeological sites (364) are currently known to be in these buffers. As of December 2013, National Register evaluations have been conducted for 102 sites in target and buffer areas. Evaluations have occurred in Superior Valley, Airport Lake, Baker, George, Cole's Flat, Charlie, Armitage Airfield, and North Coso LMUs. An additional 61 sites located in the Cactus Flats and Airport Lake LMUs are currently undergoing evaluation. In 2014, additional sites located in George, Baker, and Charley LMUs will be evaluated. Any ground-disturbing activities, for example, ground-to-ground or air-to-ground munitions test incidental impacts, debris scatter, placement of camera stands and test monitoring equipment, and UAS launch and retrieval (including driving off-road), have the potential to impact or affect cultural resources. The types of undertakings that are categorized as no historic properties affected or no adverse effect are provided in Appendix J of the ICRMP. These undertakings include the continued use of high explosives within test facilities and designated targets in areas that have been used historically for this purpose, are highly disturbed, and for which consultation has been completed and effects are consistent with current use.

The proposed increase in the level of use of test areas and targets has the potential to result in an increase in disturbance to cultural or paleontological resources within buffers. However, increased impacts to resources located in target areas would be reduced either through maintaining current use in those portions of target areas known to contain historic properties, avoidance, or the implementation of the SOPs for the treatment of cultural resources described in the ICRMP. The likelihood of impacts to cultural and paleontological resources or adverse effects within the buffer zones would be reduced by implementation of the SOPs for the treatment of cultural resources described in the ICRMP. These procedures include cultural resources inventory of new or incompletely inventoried buffer zones, review by the CRPM of documentation of any known unevaluated or assumed eligible cultural resources within the buffer zones, preparation and submittal to the CRPM of a report documenting the effects of the undertaking, and consultation if historic properties would be affected. Additionally, in compliance with NAWSCL ICRMP and NAWCWD road usage direction, vehicular traffic would be restricted to existing roads. Instrumentation would also be restricted to existing roads and established instrumentation sites.

Biological resources damage associated with over-populations of horses and/or burros is most pronounced at springs and seeps. These same areas also tend to support the highest density and diversity of prehistoric cultural resources (U.S. Navy 2013b). Cultural properties associated with springs would be protected through installation of new fencing and upkeep existing fencing around these resources. Additionally, prior to gather events, NAWSCL cultural resource personnel will survey the proposed run or water traps and staging areas for potential impacts to historic properties. In cases where the traps are located in or near historic properties, an archaeologist would be on-site during gather activities to ensure that the proposed gather does not adversely affect elements that contribute to the eligibility of the cultural property or accidently impact surrounding sites.

Under the Proposed Action, potential adverse effects to historic properties may be avoided or minimized by implementation of the measures proposed in Section 4.5.2.2. Potential impacts to cultural or paleontological resources would be less than significant.

Ground Troop Training

Under the Proposed Action, GTT activities would increase. GTT activities would continue to be restricted to approved areas (see Section 2.3.1.2 Range Ground Events) throughout the NAWSCL ranges. GTT activities may occur on existing travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test

sites, and instrumentation sites. In compliance with Installation policy/direction, vehicle traffic would be limited to the travel surface of the road, and developed target, test, and instrumentation sites.

The Seabees would continue to conduct quarry training at the Minerals Products Training Complex and water well drilling training within specific approved areas of the North Range Station (Baskerville 2010; Donaldson 2009; La Pierre 2010). Continued activities in the Seabee training facilities would have no adverse effects to cultural resources and no impacts to historic properties or paleontological resources.

The types of undertakings that are categorized as no historic properties affected or no adverse effect are provided in Appendix J of the ICRMP. These include use of high explosives in existing target areas or test sites with high levels of disturbance, and small group single-pass pedestrian foot traffic in which routes and areas used are varied.

Potential adverse effects to historic properties may be avoided or minimized by implementation of the measures proposed in Section 4.5.2.2. Potential impacts to cultural or paleontological resources would be less than significant.

Directed Energy Events

DE activities conducted at NAWSCL include HEL and HPM weapons systems, which are described in Section 2.3.1.2 and Appendix B. Both systems may be deployed from land, aircraft, or ship-based platforms against air- or ground-based targets. Disturbance from ground-deployed systems may occur on existing travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, and instrumentation sites. Vehicle traffic would be limited to the travel surface of roads, and developed target, test, and instrumentation sites.

High-Energy Laser Use

Under the Proposed Action, HEL activities would continue. Potential adverse effects to historic properties from HEL activities may be avoided or minimized by implementation of the measures proposed in Section 4.5.2.2 and in Section 7 of the ICRMP. Potential impacts to cultural resources would be less than significant.

HEL use and associated support activities would be unlikely to disturb the subsurface geologic units that contain paleontological resources. Therefore, proposed HEL events would have no impacts to paleontological resources.

High-Power Microwave Use

Under the Proposed Action, HPM activities would continue. Potential effects to cultural resources would be through the construction or placement of platforms, monitoring equipment, and/or targets. Potential adverse effects to historic properties from HPM activities may be avoided or minimized by implementation of the measures proposed in Section 4.5.2.2. Potential impacts to cultural resources would be less than significant.

HPM use and associated support activities would be unlikely to disturb the subsurface geologic units that contain paleontological resources. Therefore, proposed HPM events would have no impacts to paleontological resources.

Munitions and Energetic Material Expenditures

Under the Proposed Action, activities involving munitions and energetic material expenditures would increase by up to 25 percent. Any ground-disturbing activities, for example, ground-to-ground or air-to-ground munitions test incidental impacts, have the potential to impact or affect cultural resources. The types of undertakings that are categorized as no historic properties affected or no adverse effect are

provided in Appendix J of the ICRMP. These include use of high explosives in existing travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, or instrumentation sites with high levels of disturbance; and continued use of high explosives within a facility, so long as the activities conducted are consistent with current and historic use and there is no potential to increase disturbance. Vehicle traffic associated with munitions and energetic material expenditures would be limited to the travel of surface roads, and developed target, test, and instrumentation sites.

Potential adverse effects to historic properties may be avoided or minimized by implementation of the measures proposed in Section 4.5.2.2 and in Section 7 of the ICRMP. Potential impacts to cultural resources would be less than significant.

Nonmilitary Uses

Native American Use

Native American access to the Coso Hot Springs and Prayer Site would continue to be accommodated in accordance with the existing MOA between NAWSCL and Native American tribes. Access to other locations on NAWSCL or by Native American tribal members not covered under the MOA would continue to be considered on a case-by-case basis. Access to areas for traditional and religious purposes is not expected to have an adverse effect on cultural or paleontological resources, and no significant impacts would occur.

Geothermal

There are no proposed changes to geothermal operations under the Proposed Action, and no changes would be anticipated with respect to the nature and overall scope of current operations apart from routine and recurring activities (e.g., potential shutting down of existing wells or opening of new wells within approximately the current production area). The Coso geothermal development is run by a single operator, the Coso Operating Company, in part as a DoN contractor (Navy One and Two power plants) and as a BLM geothermal lease holder (BLM East and West power plants). These four power plants are located within the Coso Geothermal LMU. Access to the geothermal development area is controlled by the DoN in the same way that access is controlled to all lands within NAWSCL. Daily access to the Coso geothermal development area is coordinated with the NAWSCL Range Department and the area is evacuated whenever NAWSCL mission commitments indicate potential safety conflicts with weapons testing or other military uses of their Range land.

Cultural resources identified in the vicinity of the Coso geothermal development area include the Coso Hot Springs (CA-INY-475/H) approximately 1.2 miles (2 kilometers) east of the nearest geothermal well field.

Coso Hot Springs is listed in the National Register based on Native American and historic-era significance, and is a TCP used for sacred spiritual/religious ceremonies and medicinal healing purposes. The site demonstrates repeated use by Native Americans from prehistoric times to present.

NAWSCL's commitment to the protection of Coso Hot Springs is evidenced in agreement documents addressing this resource. A June 1979 MOA with the Coso Ad Hoc Committee, Owens Valley Paiute – Shoshone Band, and the Kern River Valley Indian Community addresses Native American access to Coso Hot Springs (U.S. Navy 1979a) and called for the development of Cultural Resource Management Plan. In December 1979, a PMOA was signed between the ACHP, California SHPO, and Commander of NAWSCL for the DoN Geothermal Development Program in the vicinity of Coso Hot Springs (U.S. Navy 1979b). This MOA serves as the management plan. It dictated cultural resources management practices for the development of the geothermal field and provides direction for ongoing activities related to geothermal development. Together these documents include provisions for Native American access to the springs, regular monitoring of the condition of the thermal features, and procedures for the

identification and management of cultural resources that may be affected by undertakings associated with geothermal development. As a result of government-to-government dialogue between participating tribes and the DoN by and through the NAWSCL Commanding Officer, a new MOA was developed in January 2014 to improve access to Coso Hot Springs. The new agreement makes provision for increased access to Coso Hot Springs, by descendants of indigenous peoples that inhabited lands and/or conducted traditional cultural activities within the boundaries of NAWSCL, for the purpose of continued traditional cultural observances and practices. As of this writing, the new MOA has been signed by the DoN and one tribe (Timbisha Shoshone).

Coso Hot Springs monitoring reports are distributed annually to the SHPO, ACHP, and Native American groups who may have concerns regarding the potential effects of the Geothermal Development Program on the Hot Springs. Those concerns include appreciable change in water temperature and elevation at the South Pool since the onset of monitoring Coso Hot Springs surface activity, which could affect tribal use of the springs for healing purposes (Curry 2004).

As discussed in detail in Section 3.6.7, a number of studies conducted since the late 1980s have looked at the Coso Hot Springs geothermal area and/or the nearby deep geothermal reservoir. Most recently, an independent hydrologic analysis conducted of the Coso geothermal system recognized that changes have occurred at the hot springs that correlate temporally with the onset of geothermal production; however, it could not conclusively be determined whether the changes were due to the initiation of geothermal development or to natural fluctuations that have been observed at geothermal systems that have not been developed commercially (ITSI 2007).

It is clear in light of the continued visitation to the hot springs by tribes from the Owens Valley and members of Kern River Native American Community that the Coso Hot Springs have retained their value and integrity as a TCP since geothermal production began in the Coso Geothermal LMU, and continue to do so.

In sum, conditions at Coso Hot Springs (temperature and water levels) have been relatively stable since 2002, with average temperature declining appreciably subsequent to 1993. Additionally, Coso Hot Springs retains its value and integrity as a TCP. Further, while the DoN considers geothermal development has not caused surface changes at Coso Hot Springs, it notes—in light of the ITSI study's acknowledgement that it is possible that geothermal production is linked to surface changes—that there are no appreciable changes proposed or anticipated with respect to the nature and overall scope of current or future geothermal operations at NAWSCL. Accordingly, the Proposed Action would have no adverse effects on historic properties, and there would be no significant impacts to cultural resources. However, should changes to the surface activity of Coso Hot Springs occur as a result of geothermal development, mitigation measures would be developed in accordance with the MOA (U.S. Navy 1979b).

Research and Education

Access to NAWSCL-administered lands for continuing research and educational programs would be allowed to the extent compatible with the DoN's mission. New research and education programs would be considered on a case-by-case basis. Research and educational projects would be undertaken when they provide information significant to understanding a past national or cultural event, or in the identification and classification of fossil localities, or when they assist the instillation with Section 106 and 110 obligations. Educational programs such as field schools assist the Installation with its Section 106 responsibilities by conducting test excavations to assist in determining whether or not sites are eligible for listing to the National Register. Research adds to the existing body of knowledge regarding sensitive and protected environmental resources that are present on NAWSCL, and the data are frequently presented for public education through professional presentations and scholarly publications. Research is conducted in accordance with the ARPA. Educational programs and research with the potential for ground

disturbance would undergo review through the Installation's existing environmental review process. During the environmental review process, potential impacts to cultural resources would be identified, evaluated, and mitigated (as appropriate) according to NEPA, Section 106 of the NHPA, the NAGPRA, and the AIRFA. Field participants in these programs would receive environmental awareness training. Academic research on NAWSCL has contributed greatly to the understanding of regional prehistory and to advanced studies in a number of fields. Research and educational programs should have beneficial effects to historic properties, and there would be beneficial impacts to cultural and paleontological resources.

Recreation

Under the Proposed Action, NAWSCL would continue to allow limited recreational use on a case-by-case basis.

Camping. NAWSCL has previously developed campgrounds at Birchum Springs, Renegade Canyon, and Coso Village, although the camping areas at Renegade Canyon and Coso Village are no longer in use. None of these camping areas have been inventoried or evaluated for cultural resources. Camping also occurs in undeveloped areas in association with research and educational programs. Camping activities have the potential to disturb cultural resources through inadvertent disturbance of artifacts or archaeological features, and cultural or paleontological resources through unauthorized collection. Under the Proposed Action, camping at developed campgrounds and undeveloped locations, either for recreational use or in association with educational programs, would be permitted on a case-by-case basis. Camping at the developed campgrounds would occur at historic or less-than-historic levels and would therefore be an undertaking that qualifies for a categorical determination of no adverse effect to historic properties. Undeveloped areas, if previously unevaluated, would undergo review through the Installation's existing environmental review process presented in the ICRMP prior to use. Additionally, campers would receive the standard safety, security, and environmental awareness briefing by trained NAWSCL personnel. Per the ICRMP, use of established campgrounds on the Installation would have no adverse effect. Therefore, potential impacts to cultural and paleontological resources would not be significant.

Golf and Gym Access. The golf course and gymnasium are in developed areas. The terrain in these areas has been substantially altered through removal of native soils by grading, deposition of fill soils, and landscaping. Access to these facilities is via paved roads, and the buildings are not eligible resources. The likelihood of finding intact cultural deposits or paleontological deposits in these areas is minimal. No adverse effects to historic properties would occur; therefore, no significant impacts would occur to cultural and paleontological resources.

Hiking. Hiking would continue to be allowed on previously graded roads and on trails. As discussed in the ICRMP, a single pedestrian pass over an archaeological site constitutes no adverse effect. Additionally, hikers would receive the standard safety, security, and environmental awareness briefing by trained NAWSCL personnel. Therefore, no adverse effects would occur to historic properties through hiking, and the potential impacts to cultural and paleontological resources would not be significant.

Hunting. Chukar hunting would continue to occur during years when there is an abundance of chukar. Hunters would be escorted by NAWSCL personnel trained in safety, security, and environmental awareness. As described in the ICRMP, pedestrian traffic related to NAWSCL-sponsored hunting events is an undertaking that qualifies for a categorical determination of no adverse effect to historic properties. The potential impacts to cultural and paleontological resources would not be significant.

Equestrian Use. Equestrian use would continue to be permitted on existing trails along the southern boundary of the North Range. Equestrian use would be restricted to these disturbed areas, which contain

no archaeological resources and no fossil localities. Therefore, continued equestrian use would result in no adverse effects to historic properties and no significant impacts to cultural or paleontological resources.

Off-Road Vehicle Use. ORV use would continue to be allowed for crossing Randsburg Wash Access Road during BLM-scheduled public events. Participants receive an environmental awareness briefing at the start of each event. As described in Chapter 2, these events are limited to approximately 8 per year, with approximately 100 riders per event. ORV use would continue to be restricted to a specific footprint in Randsburg Wash Access Road, which contains no cultural resources. There would be no access to paleontological resources. Therefore, there would be no adverse effects to historic properties and no significant impacts to cultural or paleontological resources.

Petroglyph Tours. Public access to Little Petroglyph Canyon would continue to be allowed at the discretion of the NAWSCL Commander. All tours are limited to Little Petroglyph Canyon and were conducted through an MOA between NAWSCL and the Maturango Museum in Ridgecrest. Although the MOA is no longer in effect, NAWSCL continues to allow the tours through the museum and other private organizations. Tours not sponsored by the museum or to other petroglyph areas would continue to be considered on a case-by-case basis. Tours are limited to the bottom of the canyon, which is an active wash. Tours are accompanied by guides trained and certified by NAWSCL personnel in safety and security requirements and environmental awareness, including measures for protecting rock art. Given these restrictions, there would be no potential to impact or adversely affect those elements that contribute to the canyon's individual eligibility, or its eligibility as a contributing element to the district. Therefore, continued public access to Little Petroglyph Canyon under the current conditions would result in no adverse effects to historic properties, and potential impacts to cultural resources would not be significant. No paleontologically sensitive geological deposits are present in Little Petroglyph Canyon; therefore, no impacts to paleontological resources would occur.

Bird Watching. Public access for annual Audubon Society and other bird count events would continue to be allowed. Typically, these events occur with groups of less than 20 individuals. An environmental awareness briefing would be administered to participants prior to the start of the event(s). A single pedestrian pass over an archaeological site constitutes no adverse effect. Therefore, no adverse effects would occur to historic properties through bird watching, and potential impacts to cultural and paleontological resources would not be significant.

Photography. Photography would continue to be allowed on a limited basis at the discretion of the NAWSCL Commander. An environmental awareness briefing would be administered by NAWSCL-trained personnel. As discussed in the ICRMP, a single pedestrian pass over an archaeological site constitutes no adverse effect. Therefore, no adverse effects would occur to historic properties through photography, and potential impacts to cultural and paleontological resources would not be significant.

CLUMP Implementation

The CLUMP provides an integrated framework for the management of ongoing and future military activities, public health and safety, and environmental conservation programs. Under the Proposed Action, the CLUMP would be revised and would continue to provide a vehicle for management of cultural and paleontological resources on withdrawn lands through incorporation of the ICRMP. As discussed in Section 3.5.4, the ICRMP would be the primary vehicle for compliance with Section 106 (36 CFR § 800.3 – 800.6) at NAWSCL for identification, consultation, assessment of effects, and mitigation of adverse effects to historic properties.

As per DoD Instructions (DoDINST) 4715.3, the ICRMP includes the following content: a summary of the Installation's mission and history; applicable federal statutes, regulations, EOs, and instructions; a natural

and cultural context for the Installation; identification of the Installation's cultural resources; procedures for the management and protection of cultural resources at NAWSCL; cultural resources management priorities; management procedures for ongoing identification and conservation of cultural resources; and integration with other NAWSCL management plans. Typically, a PA presents the processes for the Installation's Section 106 compliance and consultation procedures, and implements the ICRMP. However, NAWSCL, in consultation with the SHPO, has incorporated these Section 106 compliance processes and procedures into the body of the ICRMP, and the PA implements the ICRMP. The ICRMP supplants all previous management plans, with the exception of the Sugarloaf Management Plan. Implementation of the CLUMP would be a beneficial impact to cultural and paleontological resources at NAWSCL.

Cumulative Impacts

The analysis for cumulative effects on cultural and paleontological resources differs somewhat from the impact analysis conducted for the NAWSCL on-installation effects, because off-installation projects do not have to be conducted in accordance with the NAWSCL ICRMP. The NAWSCL ICRMP identifies processes for the management of cultural resources within specific areas of responsibility at NAWSCL, as it is the Installation's responsibility to consider the effects of its actions in order to avoid, minimize, or mitigate any impact to eligible cultural resources or to paleontological resources that might occur as a result of its actions. The NAWSCL procedures for the environmental review process also apply for the management and protection of paleontological resources on the Installation. Other plans developed for management of cultural resources at NAWSCL include management strategies for the historic buildings on the Installation. In addition, on-installation construction projects (e.g., solar energy field and new school construction) or establishment of new training areas (e.g., expanded EOD training area) would be reviewed early in the planning process by NAWSCL environmental staff, and standard procedures would be applied to ensure that potential impacts to prehistoric, historic, and paleontological resources are avoided or minimized.

Geothermal plant operations would continue at the Coso KGRA. These operations may include construction and ground-disturbing activities. However, the continuation of DoN geothermal operations within the KGRA would follow NAWSCL protocols for identification and avoidance or minimization of impacts to cultural and paleontological resources. Therefore, continuation of geothermal plant operations is not anticipated to result in adverse effects to historic properties and no significant impacts to cultural and paleontological resources are anticipated.

The Ridgecrest Solar Power Project involves construction of new facilities, which would result in a higher potential for the loss or destruction of archaeological resources; however, a cultural resources survey has been conducted at the Ridgecrest Solar Power Project site. Unavoidable resources were identified and recorded in accordance with federal and state guidelines. One historic archaeological site was identified and evaluated for the National Register. The site was determined not eligible, and the project was found to have no adverse effects to historic properties. In the event that additional archaeological or human remains are discovered, construction would cease until consultations required under Section 106 are complete (Solar Millennium 2009).

Provisions of the City of Ridgecrest General Plan would support low intensity and open space land uses near NAWSCL to help support compatibility with the NAWSCL mission, which would minimize potential impacts to cultural and paleontological resources from development. The remainder of the cumulative projects identified for the upper Mojave Desert, including the Deep Rose Geothermal Exploratory Project, Haiwee Geothermal Leasing Area, the Digital 395 Project, and the proposed zeolite mine are distant from NAWSCL and include construction activities, which could result in the loss or destruction of prehistoric, Native American, historic, or paleontological resources. The environmental assessment/mitigated negative declaration for the Digital 395 Project outlines measures to avoid and reduce potential impacts

to cultural resources. Avoiding National Register-eligible cultural resources and implementing the projects in compliance with NHPA Section 106 and other applicable requirements would reduce potential cumulative impacts.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative impacts to cultural or paleontological resources as it relates to other military land withdrawal actions in the region.

Potential resource impacts from development projects in the region either would be localized, would affect areas appreciably distant from NAWSCL, and/or would not be likely to rise to a level having the potential to have appreciable cumulatively significant impacts when implemented in combination with the Proposed Action. Therefore, implementation of the other projects in combination with the Proposed Action would not have significant cumulative impacts to cultural or paleontological resources.

4.5.2.2 Mitigation Measures and Impact Avoidance and Minimization Measures

Proposed test and training activities, as well as facility and infrastructure activities conducted on NAWSCL ranges are required to undergo a compliance analysis in accordance with the NAWS Environmental Review Process.

- Proposed actions that are found by the CRPM to have no historic properties affected or no adverse effect to historic properties may proceed;
- Use of existing targets, test sites, target areas, monitoring stations, photographic stations, and roads (NAWCWD 2010) located within the boundaries of historic properties shall be considered a categorical no adverse effect (36 CFR 800.5(b)) when activities conducted within these boundaries are consistent with the use documented in Appendix B and there is no potential to increase disturbance;
- The standard APE is defined as the target or test site plus a 656-foot (200-meter) buffer; however, the APE may be increased or decreased in consultation with Weapons Division based on data provided by test management range personnel;
- Proposed actions that are found by the CRPM to have an adverse effect to a historic property or properties would require relocation or modification of the proposed testing or training, or implementation of measures to reduce effects to historic properties.

Mitigation Measures

Potential impacts to cultural and paleontological resources would be reduced to less than significant and potential adverse effects to historic properties would be addressed by implementation of the mitigation measures presented in the ICRMP:

- Environmental awareness briefings would be required for military, civilian, and contractor personnel; and
- Vehicle traffic would be limited to roads (in accordance with Ranges Road Usage Direction), test and target areas, and existing instrumentation sites.

Impact Avoidance and Minimization Measures

Impact avoidance and minimization measures that would be implemented to reduce potential impacts to cultural resources to less than significant include:

- Undeveloped areas, if previously unevaluated, would undergo review through the Installation's existing environmental review process presented in the ICRMP prior to use. Compliance with the ICRMP.
- Internal DoN discussions (e.g., between the EMD and the proponent) during the planning process to reduce impacts to cultural resources through avoidance strategies or project alteration.
- Completion of environmental studies around targets and test sites to make informed avoidance decisions.
- Consultation between the DoN, federal and state regulatory agencies, Tribes, and interested parties to resolve potential adverse effects to historic properties.
- Development and implementation of appropriate treatment plans for cultural resources determined to be National Register-eligible in accordance with the ICRMP, including data recovery fieldwork, data analysis, and consultation, would occur; and
- Development and implementation of appropriate treatment plans for paleontological resources consistent with professional standards protocols and measures established by professional organizations and agencies including SVP (SVP 1995, 1996) as discussed in the ICRMP, and BLM (BLM 2008).

The possibility exists that use of the target and test areas and buffers may adversely affect buried resources and possibly unburied resources through unanticipated events. In the unlikely event of the discovery of buried resources (archaeological or human remains), impacts would be reduced to a less-than-significant level and adverse effects addressed through implementing management practices in accordance with procedures described in the ICRMP.

In the event that human remains are found, the following would occur:

- Suspension of ground-disturbing activities in the affected area, preservation in place and avoidance of human remains and associated funerary or sacred objects, and notification of NAWSCL; and
- NAWSCL would initiate consultation with the appropriate state and federal agencies and federally recognized tribes in accordance with established NAGPRA procedures, including a 30-day cessation of work in the affected area; creation of a Plan of Action and appropriate consultation may prevent 30-day work stoppages (43 CFR 10).

Implementation of these measures would reduce impacts to cultural resources to less than significant and would address potential adverse effects to historic properties.

Small group training (approximately 8 troops) without support vehicles may be conducted in currently approved areas as well as undisturbed areas throughout the North and South Ranges. GTT activities occurring in undisturbed areas would have no associated ground-disturbing activities. These activities occur on an as-needed basis.

GTT involving larger groups (not to exceed 40 troops) or using support vehicles may only occur on existing travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, and instrumentation

sites. These training activities may expand by up to 25 percent. Small group training with support vehicles occur on an as-needed basis.

Measures to reduce potential impacts to cultural resources for GTT activities, including Seabees and EOD training activities on NAWSCL ranges, are as follows:

- Continued Environmental Awareness briefings would be conducted for personnel operating in GTT areas;
- Off-road vehicle use and any ground-disturbing activities is prohibited;
- Small group GTT locations over land would be intentionally varied in order to reduce the possibility of the formation or marking of trails by ground troops. Only pedestrian traffic, including pack animals and working dogs, is approved of for off road travel; and
- Larger group GTT activities would occur on existing travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, and instrumentation sites. These activities would not include any new surface disturbances.

Implementation of these measures would reduce impacts to cultural resources to less than significant, and would address potential adverse effects to historic properties.

Summary of Impacts

Since the land withdrawal is a renewal of a previously approved land withdrawal, it would not have any direct or indirect impacts on cultural resources at NAWSCL.

Armitage Airfield National Register-eligible BSOs and other eligible BSOs may have an increased need for maintenance and repair from increased use. Historic structures may potentially be affected by noise vibrations. By complying with the Secretary of the Interior's publication providing standards and guidelines, no adverse effects would occur to historic properties, and no significant impacts would occur to cultural resources. Range flight events may potentially affect areas visited by Native Americans on NAWSCL for ceremonial purposes or traditional activities. Native American access to these areas is granted outside of periods of active range use. Therefore, proposed range flight events would have no adverse effect on historic properties, and potential impacts to cultural resources would not be significant. There would be no impacts to paleontological resources.

Many targets within NAWSCL have not been fully investigated for cultural resources and have been subject to heavy bombardment for several years. The integrity of many resources within these areas are most likely compromised, although some target areas are known to contain National Register-eligible or unevaluated resources. Buffer zones receive impacts associated with use of target and test areas. As part of the ERP, inventories would occur in areas in which it has been demonstrated that eligible sites exist in target areas where there are minimal levels of disturbance. Additional eligibility determinations are expected to occur during this year. Any ground-disturbing activities have the potential to impact cultural resources or affect historic properties.

Potential adverse impacts to cultural or paleontological resources would be reduced by implementation of procedures for the treatment of cultural resources and categorical exemptions described in the current ICRMP, and implementation of protocols consistent with established professional standards (SVP 1995, 1996, as discussed in U.S. Navy 2012b, BLM 2008) for the assessment and mitigation of impacts to paleontological resources. Additionally, in compliance with NAWSCL policy/direction, vehicular traffic would be restricted to existing travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, and instrumentation sites. Under the Proposed Action, impacts by range ground activities would be reduced to less than significant and adverse effects would be addressed through the implementation of

the mitigation measures proposed in Section 4.5.2.2. In compliance with Installation policy/direction, vehicle traffic would be limited to the travel surface of the road, and developed target, test, and instrumentation sites. The Seabees would continue to conduct quarry training at the Minerals Products Training Complex and water well drilling training within specific approved areas of the North Range Station and these activities would have no effects to cultural resources and no impacts to historic properties or paleontological resources.

Native American access to the Coso Hot Springs and Prayer Site would continue to be conducted in accordance with the existing MOA between NAWSCL and Native American tribes. Access to areas for traditional and religious purposes is not expected to have an adverse effect on cultural resources, and no significant impacts would occur.

NAWSCL is committed to the protection of Coso Hot Springs. This commitment is evidenced through the development of a new MOA in January 2014 to improve access to Coso Hot Springs. The updated agreement makes provision for increased access to Coso Hot Springs, by descendants of indigenous peoples that inhabited lands and/or conducted traditional cultural activities within the boundaries of NAWSCL, for the purpose of continued traditional cultural observances and practices. As of this writing, the new MOA has been signed by the DoN and one tribe (Timbisha Shoshone).

Numerous studies have been conducted since the 1980s in an attempt to characterize the hydrologic/geologic relationship between the surface thermal features and the deep geothermal reservoir. An independent hydrologic analysis recognized that changes have occurred that correlate temporally with the onset of geothermal production; however, it could not conclusively be determined whether the changes were due to the initiation of geothermal development or to natural fluctuations (ITSI 2007).

Tribes from the Owens Valley and members of Kern River Native American Community continue to visit the Coso Hot Springs as a TCP since geothermal production began in the Coso Geothermal LMU. In sum, conditions at Coso Hot Springs (temperature and water levels) have been relatively stable since 2002, with average temperature declining appreciably subsequent to 1993. Additionally, Coso Hot Springs retains its value and integrity as a TCP. Further, while the DoN considers geothermal development has not caused surface changes at Coso Hot Springs, it notes—in light of the ITSI study's acknowledgement that it is possible that geothermal production is linked to surface changes—that there are no appreciable changes proposed or anticipated with respect to the nature and overall scope of current or future geothermal operations at NAWSCL. Accordingly, the Proposed Action would have no adverse effects on historic properties, and there would be no significant impacts to cultural resources. However, should changes to the surface activity of Coso Hot Springs occur as a result of geothermal development, mitigation measures would be developed in accordance with the MOA (U.S. Navy 1979b).

Research adds to the existing body of knowledge regarding sensitive and protected environmental resources, and the data are frequently presented for public education through professional presentations and scholarly publications. Research and education should have beneficial effects to historic properties, and there would be beneficial impacts to cultural and paleontological resources.

Camping would continue at the developed campgrounds at current levels. Camping in undeveloped areas, if previously unevaluated, would undergo review through the Installation’s existing environmental review process presented in the ICRMP prior to use. Campers would receive the standard safety, security, and environmental awareness briefing by trained NAWSCL personnel. With implementation of these measures, no adverse effects would occur to historic properties, and potential impacts to cultural and paleontological resources would not be significant.

The golf course and gymnasium are in developed areas. Hiking would continue to be allowed on previously graded roads and on trails, and a single pedestrian pass over an archaeological site constitutes no adverse effect. Hunters would be escorted by NAWSCL personnel trained in safety, security, and environmental awareness. Equestrian use would be restricted to existing trails, which contain no archaeological or paleontological resources. Therefore, continuation of these uses would result in no impacts to cultural or paleontological resources and no adverse effects to historic properties.

ORV use would continue to be restricted to a specific footprint in Randsburg Wash Access Road, which contains no cultural or paleontological resources. Therefore, there would be no adverse effects to historic properties and no impacts to cultural or paleontological resources would occur.

Petroglyph tours are accompanied by guides trained and certified by NAWSCL personnel in safety and security requirements and environmental awareness, including measures for protecting rock art. Therefore, continued public access to Little Petroglyph Canyon under the current conditions would result in no adverse effects to historic properties, and potential impacts to cultural resources would not be significant. No paleontologically sensitive geological deposits are present in Little Petroglyph Canyon, therefore no impacts to paleontological resources would occur.

Environmental awareness briefings would be administered to bird watching and photography participants. A single pedestrian pass over an archaeological site constitutes no adverse effect. Therefore, no adverse effects would occur to historic properties and potential impacts to cultural and paleontological resources would not be significant.

The CLUMP would be revised and would continue to provide a vehicle for management of cultural resources on withdrawn lands through incorporation of the ICRMP. NAWSCL, in consultation with the SHPO, has incorporated Section 106 compliance processes and procedures into the body of the ICRMP, and the PA implements the ICRMP. Implementation of the CLUMP would be a beneficial impact to cultural and paleontological resources at NAWSCL.

The continuation of geothermal plant operations proposes to continue activities that are currently in place at the Coso KGRA. These operations do not include construction, ground-disturbing activities, or the sale or transfer of land. Therefore, this project, considered in combination with the Proposed Action, would not result in cumulative impacts to cultural or paleontological resources. The remainder of the cumulative projects would include construction, facility demolition, or the sale or transfer of land. These activities could result in the loss or destruction of prehistoric, Native American, historic, or paleontological resources. In addition, because not all areas within the region have been fully investigated, it is unknown what types of cultural or paleontological resources may be affected. Avoiding National Register-eligible cultural resources and implementing the projects in compliance with NHPA Section 106 and other applicable requirements would reduce potential cumulative impacts to a less-than-significant level (Table 4.5-1).

4.5.3 Baseline Alternative/Updated No Action Alternative (Alternative 2)

The Baseline Alternative/Updated No Action Alternative includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013), with continuation of military activities at current levels. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised, as appropriate, and implemented to manage land use and environmental resources at NAWSCL.

Table 4.5-1
Proposed Action (Alternative 1) – Summary of Cultural Resources Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures
(Page 1 of 3)

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
Land withdrawal renewal would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses	
The proposed increase in the level of use of aircraft operations, test areas, and targets would potentially result in an increase in disturbance to cultural resources.	*Mitigation Measures* Environmental awareness briefings would be required for military, civilian, and contractor personnel. Vehicle traffic would be limited to roads (in accordance with Ranges Road Usage Direction), test and target areas, and existing instrumentation sites. *Impact Avoidance and Minimization Measures* Undeveloped areas, if previously unevaluated, would undergo review through the Installation's existing environmental review process presented in the ICRMP prior to use. Compliance with the ICRMP. Internal discussions between the EMD and PM during the planning process to reduce impacts to cultural resources through avoidance strategies or project alteration. Completion of environmental studies around targets and test sites to make informed avoidance decisions. Consultation between the DoN, federal and state regulatory agencies, Tribes, and interested parties to resolve potential adverse effects to historic properties. Development and implementation of appropriate treatment plans for cultural resources determined to be National Register-eligible in accordance with the ICRMP, including data recovery fieldwork, data analysis, and consultation, would occur. Development and implementation of appropriate treatment plans for paleontological resources consistent with professional standards protocols and measures established by professional organizations and agencies including the SVP as discussed in the ICRMP, and the BLM.

Table 4.5-1
Proposed Action (Alternative 1) – Summary of Cultural Resources Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures
(Page 2 of 3)

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Military Uses (Continued)	
	In the event that human remains are found, the following would occur: Suspension of ground-disturbing activities in the affected area, preservation in place and avoidance of human remains and associated funerary or sacred objects, and notification of NAWSCL. NAWSCL would initiate consultation with the appropriate state and federal agencies and federally recognized tribes in accordance with established NAGPRA procedures, including a 30-day cessation of work in the affected area; creation of a Plan of Action and appropriate consultation may prevent 30-day work stoppages (43 CFR 10). Continued Environmental Awareness briefings would be conducted for personnel operating in GTT areas. Off-road vehicle use and any ground-disturbing activities is prohibited. Small group GTT locations over land would be intentionally varied in order to reduce the possibility of the formation or marking of trails by ground troops. Only pedestrian traffic, including pack animals and working dogs, is approved of for off road travel. Larger group GTT activities would occur on existing travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, and instrumentation sites. These activities would not include any new surface disturbances.

Table 4.5-1
Proposed Action (Alternative 1) – Summary of Cultural Resources Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures
(Page 3 of 3)

Impacts	Mitigations/Impact Avoidance and Minimization Measures
Nonmilitary Uses	
Nonmilitary recreational activities would not change and would not impact cultural resources.	*Mitigation Measures* • Conduct environmental awareness briefings for military, civilian, and contractor personnel. *Impact Avoidance and Minimization Measures* • Compliance with the ICRMP. • Undeveloped areas, if previously unevaluated, would undergo review through the Installation's existing environmental review process presented in the ICRMP prior to use.
Nonmilitary Uses - Geothermal	
No significant impacts.	No mitigation measures. Impact avoidance and minimization measures addressed above.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
No significant impacts.	No mitigation measures. Impact avoidance and minimization measures addressed above.
Overall Summary	
No significant impacts.	Mitigation measures addressed above. Impact avoidance and minimization measures addressed above.

4.5.3.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. A renewal of the land withdrawal would allow for continued restricted access to the NAWSCL withdrawn lands, which provides some protection to cultural resources from unauthorized collection. The land withdrawal would therefore have a beneficial effect to cultural and paleontological resources, and the ICRMP would address any potential adverse effects to historic properties and impacts to cultural resources. The analysis for potential impacts to cultural resources from military and non-military uses is presented in the subsections below.

Military Uses

Range Flight Events

Under the Baseline Alternative/Updated No Action Alternative, there would be no change in the level of flight events for test and training. Flights would continue to originate and terminate from Armitage Airfield

and airfields on other Installations. Continued use of Armitage Airfield under the Baseline Alternative/Updated No Action Alternative would potentially contribute to wear on the National Register-eligible BSOs associated with the airfield, and any BSOs that may be affected by noise vibrations. The maintenance and repair of the BSOs would be conducted in accordance with the current NAWSCL historic preservation guidelines, and, therefore, impacts to these cultural resources would not be significant. No adverse effects would occur to historic properties. There would be no impacts to paleontological resources.

Ground-launched UAS (Groups 1-3) would continue to be launched and recovered from disturbed areas. Potential adverse effects to historic properties may be avoided or minimized by implementation of the measures proposed in Section 4.5.3.2. Potential impacts to cultural resources or paleontological resources in these disturbed areas would be reduced to less than significant.

Range flight events may potentially affect the feeling of the Coso Hot Springs TCP and other areas on NAWSCL used by Native Americans for ceremonial or traditional activities. However, Native American access to TCPs or other sensitive areas would occur outside of periods of active range use. Therefore, range flight events under the Baseline Alternative/Updated No Action Alternative would have no adverse effects on these resources, and potential impacts to cultural resources would not be significant.

Airfield Flight Events

Under the Baseline Alternative/Updated No Action Alternative, there would be no change in the level of airfield flight events. Airfield flight events have no impacts to ground-based cultural or paleontological resources. Continued use of Armitage Airfield under the Baseline Alternative/Updated No Action Alternative would potentially result in wear on the National Register-eligible BSOs associated with the airfield. The maintenance of BSOs would be conducted in accordance with the current NAWSCL historic preservation guidelines; therefore, potential impacts to these resources would not be significant. Native American access to these areas is granted outside of periods of active range use. Therefore, proposed range flight events would have no adverse effects to historic properties, and potential impacts to cultural resources would not be significant. There would be no impacts to paleontological resources.

Range Ground Events

Target and test site use as described in Section 4.5.1 would continue at the current level. Additional targets or test areas could be reactivated. Older target areas and those with a high level of disturbance could contain materials hazardous to human health. Cultural resources investigations of targets would be made by the EMD in coordination with NAWCWD Range Department (see also section 4.5.1). Testing programs would be conducted for unevaluated and potentially eligible sites to avoid impacts to historic properties and adverse effects to cultural resources. Ground-disturbing activities within the buffer zones, including munitions test incidental impacts, debris scatter, placement of camera stands and test monitoring equipment, and UAS launch and retrieval (including driving off-road), have the potential to impact or affect cultural resources. These kinds of activities may qualify for a categorical determination of No Effects to Historic Properties in areas that have been used historically for this purpose, that are highly disturbed, and that would not have the potential to effect historic properties. Additional kinds of activities that may also qualify would be a determination of No Adverse Effect when they occur within the

boundaries of historic properties and the activities conducted within their boundaries are consistent with current use and there is no potential to increase disturbance. Potential adverse effects to historic properties may be avoided or minimized by implementation of the measures proposed in Section 4.5.3.2. Potential impacts to cultural resources or paleontological resources would be reduced to less than significant.

Ground Troop Training

Under the Baseline Alternative/Updated No Action Alternative, GTT activities would continue at current levels. The Seabees would continue to conduct quarry training at the Minerals Products Training Complex and water-well-drilling training within specific approved areas of the Installation. EOD training would continue to occur at current levels in the Darwin Wash EOD range. The types of GTT activities that are categorized as no historic properties affected or no adverse effect are provided in Appendix J of the ICRMP. These include continued use of high explosives within test facilities and designated targets in areas that have been used historically for this purpose, and consultation has been completed and effects are consistent with current use; and single-pass pedestrian foot traffic. Potential adverse effects to historic properties may be avoided or minimized by implementation of the measures proposed in Section 4.5.3.2. Potential impacts to cultural resources or paleontological resources would be reduced to less than significant.

Directed Energy Events

DE activities conducted at NAWSCL include HEL and HPM weapons systems, which are described in Section 2.3.1.2 and Appendix B. Both systems may be deployed from land, aircraft, or ship-based platforms against air- or ground-based targets. Disturbance from ground-deployed systems may occur to existing travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, and instrumentation sites. Vehicle traffic would be limited to the travel surface of roads, and developed target, test, and instrumentation sites.

High-Energy Laser Use

Under the Baseline Alternative/Updated No Action Alternative, HEL activities would continue. Potential adverse effects to historic properties from HEL activities may be avoided or minimized by implementation of the measures proposed in Section 4.5.3.2 and in Section 7 of the ICRMP. Potential impacts to cultural resources would be less than significant.

HEL use and associated support activities would be unlikely to disturb the subsurface geologic units that contain paleontological resources. Therefore, proposed HEL events would have no impacts to paleontological resources.

High-Power Microwave Use

HPM activities would continue. Potential effects to cultural resources would be through the construction or placement of platforms, monitoring equipment, and/or targets. Potential adverse effects to historic properties from HPM activities may be avoided or minimized by implementation of the measures proposed in Section 4.5.3.2 and in Section 7 of the ICRMP. Potential impacts to cultural resources would be less than significant.

HPM use and associated support activities would be unlikely to disturb the subsurface geologic units that contain paleontological resources. Therefore, proposed HEM events would have no impacts to paleontological resources.

Munitions and Energetic Material Expenditures

Under the Baseline Alternative/Updated No Action Alternative, activities involving munitions and energetic material expenditures would continue. Specific types of munitions and energetic materials used at NAWSCL are listed in Table 2-2. Any ground-disturbing activities, for example, ground-to-ground or air-to-ground munitions test incidental impacts, have the potential to impact or affect cultural resources. The types of undertakings that are categorized as no historic properties affected or no adverse effect are provided in Appendix J of the ICRMP. These include use of high explosives in existing target areas with high levels of disturbance, and continued use of high explosives within a facility where consultation has been completed and effects are consistent with current use. Vehicle traffic associated with munitions and

energetic material expenditures would be limited to the travel surface of roads, and developed target, test, and instrumentation sites.

Potential adverse effects to historic properties may be avoided or minimized by implementation of the measures proposed in Section 4.5.3.2 and in Section 7 of the ICRMP. Potential impacts to cultural resources would be less than significant.

Nonmilitary Uses

Under the Baseline Alternative/Updated No Action Alternative, existing geothermal, Native American, research and education, and recreation activities would continue. The mitigation measures for these activities are the same as described in Section 4.5.2.2. With implementation of these measures, geothermal, Native American, research and education, and recreation activities would have no adverse effects to historic properties, and potential impacts to cultural resources would not be significant.

CLUMP Implementation

The CLUMP provides an integrated framework for the management of ongoing and future military activities; public health and safety; and environmental conservation programs. Under the Baseline Alternative/Updated No Action Alternative, the CLUMP would be revised and would continue to provide a vehicle for management of cultural and paleontological resources on withdrawn lands through incorporation of the management procedures in the ICRMP, as described in Section 4.5.2.1. The ICRMP is implemented by a PA. Under the Baseline Alternative/Updated No Action Alternative, implementation of the CLUMP would be a beneficial impact to cultural and paleontological resources at NAWSCL.

Cumulative Impacts

Cumulative impacts anticipated under the Baseline Alternative/Updated No Action Alternative would be similar to the likely cumulative impacts associated with the Proposed Action, only to a somewhat lesser extent or intensity, insofar as NAWSCL's cumulative impacts would be expected to be somewhat lower under the Baseline Alternative/Updated No Action Alternative because this alternative would not include the potential increase in RDAT&E and training activities.

The cumulative projects identified for the NAWSCL area are not expected to have any significant cumulative cultural resources impacts in conjunction with the Baseline Alternative/Updated No Action Alternative. The Baseline Alternative/Updated No Action Alternative would not result in any changes to existing impacts to cultural or paleontological resources at NAWSCL. On-installation construction projects (e.g., solar energy field and new school construction) or establishment of new training areas (e.g., expanded EOD training area) would be reviewed early in the planning process by NAWSCL environmental staff, and standard procedures and site-specific mitigation measures (if required) would be applied to ensure that potential impacts to prehistoric, historic, and paleontological resources are avoided or minimized.

Geothermal plant operations would continue at the Coso KGRA. These operations do not include construction, ground-disturbing activities, or the sale or transfer of land. Therefore, continuation of geothermal plant operations would not be expected to result in significant impacts to cultural or paleontological resources.

The Ridgecrest Solar Power Project involves construction of new facilities, which would result in a higher potential for the loss or destruction of archaeological resources; however, a cultural resources survey has been conducted at the Ridgecrest Solar Power Project site. Unavoidable resources were identified and recorded in accordance with federal and state guidelines. In the event that additional archaeological or human remains are discovered, construction would cease until consultations required under Section 106 are complete (Solar Millennium 2009).

Provisions of the City of Ridgecrest General Plan would support low intensity and open space land uses near NAWSCL to help support compatibility with the NAWSCL mission, which would minimize potential impacts to cultural or paleontological resources from development. The remainder of the cumulative projects identified for the upper Mojave Desert, including the Deep Rose Geothermal Exploratory Project, Haiwee Geothermal Leasing Area, the Digital 395 Project, and the proposed zeolite mine are distant from NAWSCL and include construction, facility demolition, or the sale or transfer of land. These activities could result in the loss or destruction of prehistoric, Native American, historic, or paleontological resources. The mitigated negative declaration/environmental assessment for the Digital 395 Project outlines measures to avoid or reduce potential impacts to cultural resources. Avoiding National Register-eligible cultural resources and implementing the projects in compliance with NHPA Section 106 and other applicable requirements would reduce potential cumulative impacts.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative impacts to cultural or paleontological resources as it relates to other military land withdrawal actions in the region.

Potential cultural or paleontological resources impacts from development projects in the region either would be localized, would affect areas appreciably distant from NAWSCL, and/or would not be likely to rise to a level having the potential to have appreciable cumulatively significant impacts. Therefore, implementation of the other projects in combination with the Baseline Alternative/Updated No Action Alternative would not have significant cumulative impacts to cultural or paleontological resources.

4.5.3.2 Mitigation Measures and Impact Avoidance and Minimization Measures

Under the Baseline Alternative/Updated No Action Alternative, potential impacts to cultural and paleontological resources would be reduced to less than significant, and potential adverse effects to historic properties would be addressed by implementation of the mitigation measures and impact avoidance and minimization measures for buffer areas, GTT, and unanticipated discoveries, including human remains, as described in Section 4.5.2.2.

Summary of Impacts

Since the land withdrawal is a renewal of a previously approved land withdrawal, it would not have any direct or indirect impacts on cultural or paleontological resources at NAWSCL.

Armitage Airfield National Register-eligible BSOs and any other eligible BSOs may potentially be affected by use and noise vibrations. By complying with the Secretary of the Interior's publication providing standards and guidelines, no adverse effects would occur to historic properties, and no impacts would occur to cultural resources. Continued range flight events may potentially affect areas visited by Native Americans on NAWSCL for ceremonial purposes or traditional activities. Native American access to these areas is granted outside of periods of active range use. Therefore, proposed range flight events would have no adverse effect on historic properties, and potential impacts to cultural or paleontological resources would not be significant.

Many targets within NAWSCL have not been fully investigated for cultural resources and have been subject to heavy bombardment for several years. The integrity of many resources within these areas are most likely compromised, although some target areas are known to contain National Register eligible or unevaluated resources. Buffer zones receive impacts associated with use of target and test areas. Inventories would occur in target areas where they have not been previously inventoried to determine

whether eligible resources would be affected. Additional eligibility determinations are expected to occur during this year. Any ground-disturbing activities have the potential to impact or affect cultural resources.

Potential impacts to cultural or paleontological resources or adverse effects within the buffer zones would be reduced by implementation of the SOPs for the treatment of cultural resources and the categorical exemptions described in the ICRMP, and implementation of protocols consistent with established professional standards (SVP 1995, 1996, as discussed in U.S. Navy 2012b, BLM 2008) for the assessment and mitigation of impacts to paleontological resources. Vehicular traffic would be restricted to existing travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, instrumentation sites, and well-developed two-track roads. Under the Baseline Alternative/Updated No Action Alternative, impacts by range ground activities would be reduced to less than significant and adverse effects would be addressed through the implementation of the mitigation measures proposed in Section 4.5.2.2. The Seabees would continue to conduct quarry training at the Minerals Products Training Complex and water well drilling training within specific approved areas, and these activities would have no effects to cultural or paleontological resources and no impacts to historic properties.

Native American access to the Coso Hot Springs and Prayer Site would continue to be accommodated in accordance with the existing MOA between NAWSCL and Native American tribes. Access to areas for traditional and religious purposes is not expected to have an adverse effect on cultural resources, and no significant impacts would occur.

In sum, conditions at Coso Hot Springs (temperature and water levels) have been relatively stable since 2002, with average temperature declining appreciably subsequent to 1993. Additionally, Coso Hot Springs retains its value and integrity as a TCP. Further, while the DoN considers geothermal development has not caused surface changes at Coso Hot Springs, it notes—in light of the ITSI study's acknowledgement that it is possible that geothermal production is linked to surface changes—that there are no appreciable changes proposed or anticipated with respect to the nature and overall scope of current or future geothermal operations at NAWSCL. Accordingly, the Baseline Alternative/Updated No Action Alternative would have no adverse effects on historic properties, and there would be no significant impacts to cultural resources. However, should changes to the surface activity of Coso Hot Springs occur as a result of geothermal development, mitigation measures would be developed in accordance with the MOA (U.S. Navy 1979b).

As discussed for the Proposed Action, research and education should have beneficial effects to historic properties and cultural and paleontological resources by contributing to the understanding of regional prehistory and to advanced studies in a number of fields. Camping would continue at the developed campgrounds at current levels. Camping in undeveloped areas, if previously unevaluated, would undergo review through the Installation’s existing environmental review process presented in the ICRMP prior to use. Campers would receive the standard safety, security, and environmental awareness briefing by trained NAWSCL personnel. No adverse effects would occur to historic properties, and potential impacts to cultural and paleontological resources would not be significant.

The golf course and gymnasium are in developed areas. Hiking would continue to be allowed on previously graded roads and on trails. Hunters would be escorted by NAWSCL personnel trained in safety, security, and environmental awareness. Equestrian use would be restricted to existing trails, which contain no archaeological or paleontological resources. Therefore, continuation of these uses would result in no adverse effects to historic properties and no impacts to cultural or paleontological resources.

ORV use would continue to be restricted to a specific footprint in Randsburg Wash Access Road, which contains no cultural or paleontological resources. Therefore, there would be no adverse effects to historic properties and no impacts to cultural or paleontological resources would occur.

Petroglyph tours are accompanied by guides trained and certified by NAWSCL personnel in safety and security requirements and environmental awareness, including measures for protecting rock art. Therefore, continued public access to Little Petroglyph Canyon under the current conditions would result in no adverse effects to historic properties, and potential impacts to cultural resources would be reduced to less than significant. Environmental awareness briefings would be administered to bird watching and photography participants. No adverse effects would occur to historic properties and potential impacts to cultural resources would not be significant. No geological deposits sensitive for paleontological resources are present in Little Petroglyph Canyon, therefore no impacts to paleontological resources would occur.

The CLUMP would be revised and would continue to provide a vehicle for management of cultural resources on withdrawn lands through incorporation of the ICRMP. NAWSCL, in consultation with the SHPO, has incorporated Section 106 compliance processes and procedures into the body of the ICRMP, and the PA implements the ICRMP. Implementation of the CLUMP would be a beneficial impact to cultural resources at NAWSCL.

The Baseline Alternative/Updated No Action Alternative would not result in any changes to existing impacts to cultural or paleontological resources at NAWSCL. Consequently, no significant cumulative cultural and paleontological resources impacts would result (Table 4.5-2).

4.5.4 No Action Alternative (Alternative 3)

Because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of “no action” conditions at NAWSCL; therefore, the discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed (please see discussion in Section 2.3.3). For the purposes of the Final EIS/LEIS, the Baseline Alternative/Updated No Action Alternative is considered to effectively represent “no action” conditions or status quo (see Section 4.5.3).

Table 4.5-2
Baseline Alternative/Updated No Action Alternative (Alternative 2) - Summary of Cultural Resources Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures
(Page 1 of 3)

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
Land withdrawal renewal would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses	
The use of test areas and targets would potentially result in disturbance to cultural resources.	*Mitigation Measures* Environmental awareness briefings would be required for military, civilian, and contractor personnel. Vehicle traffic would be limited to roads (in accordance with Ranges Road Usage Direction), test and target areas, and existing instrumentation sites. *Impact Avoidance and Minimization Measures* Undeveloped areas, if previously unevaluated, would undergo review through the Installation's existing environmental review process presented in the ICRMP prior to use. Compliance with the ICRMP. Internal discussions between the EMD and PM during the planning process to reduce impacts to cultural resources through avoidance strategies or project alteration. Completion of environmental studies around targets and test sites to make informed avoidance decisions. Consultation between the DoN, federal and state regulatory agencies, Tribes, and interested parties to resolve potential adverse effects to historic properties. Development and implementation of appropriate treatment plans for cultural resources determined to be National Register-eligible in accordance with the ICRMP, including data recovery fieldwork, data analysis, and consultation, would occur. Development and implementation of appropriate treatment plans for paleontological resources consistent with professional standards protocols and measures established by professional organizations and agencies including the SVP as discussed in the ICRMP, and the BLM.

Table 4.5-2
Baseline Alternative/Updated No Action Alternative (Alternative 2) - Summary of Cultural Resources Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures
(Page 2 of 3)

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Military Uses (Continued	
	In the event that human remains are found, the following would occur: Suspension of ground-disturbing activities in the affected area, preservation in place and avoidance of human remains and associated funerary or sacred objects, and notification of NAWSCL. NAWSCL would initiate consultation with the appropriate state and federal agencies and federally recognized tribes in accordance with established NAGPRA procedures, including a 30-day cessation of work in the affected area; creation of a Plan of Action and appropriate consultation may prevent 30-day work stoppages (43 CFR 10). Continued Environmental Awareness briefings would be conducted for personnel operating in GTT areas. Off-road vehicle use and any ground-disturbing activities is prohibited. Small group GTT locations over land would be intentionally varied in order to reduce the possibility of the formation or marking of trails by ground troops. Only pedestrian traffic, including pack animals and working dogs, is approved of for off road travel. Larger group GTT activities would occur on existing travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, and instrumentation sites. These activities would not include any new surface disturbances.
Nonmilitary Uses	
Nonmilitary recreational activities would not change and would not impact cultural resources.	*Mitigation Measures* • Conduct environmental awareness briefings for military, civilian, and contractor personnel. *Impact Avoidance and Minimization Measures* • Compliance with the ICRMP. • Undeveloped areas, if previously unevaluated, would undergo review through the Installation's existing environmental review process presented in the ICRMP prior to use.

Table 4.5-2
Baseline Alternative/Updated No Action Alternative (Alternative 2) - Summary of Cultural Resources Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures
(Page 3 of 3)

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Nonmilitary Uses - Geothermal	
No significant impacts.	No mitigation measures. Impact avoidance and minimization measures addressed above.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
No significant impacts.	No mitigation measures. Impact avoidance and minimization measures addressed above.
Overall Summary	
No significant impacts.	Mitigation measures addressed above. Impact avoidance and minimization measures addressed above.

This page intentionally left blank.

4.6 GEOLOGY AND SOILS

This section identifies potential geology and soils impacts that may result from implementation of the Proposed Action and alternatives. The impact analysis compares projected conditions after implementation of each alternative to the affected environment and focuses on those activities that have the potential to adversely affect geology and soils.

4.6.1 Approach to Analysis

Potential impacts on geology and soils at NAWSCL principally are caused by physical soil disturbance resulting from munitions use, range support activities (e.g., vehicle movement), and GTT activities. Factors considered in determining whether an impact would be significant include the potential for substantial change in soil characteristics that would preclude established land uses or would adversely impact a sensitive environmental resource, such as threatened or endangered species or their habitats. Normal military and nonmilitary activities do not increase exposure to seismic hazards or to other geologic hazards (including landslides, erosion, subsidence, settlement, or volcanic eruption), so these topics are not addressed further in this section. In addition, because range flight events would be conducted in airspace above NAWSCL and would not impact geology and soils, these operations will not be addressed further in this section. Finally, because airfield flight events would be conducted on established runways and within airspace at Armitage Airfield, these operations would not impact geology and soils and will not be discussed further here.

4.6.2 Proposed Action (Alternative 1)

The Proposed Action includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013); revision and implementation of the CLUMP; and accommodation of an increase in RDAT&E and training activities of up to 25 percent, expansion of unmanned aerial and surface systems, and expansion of existing and introduction of evolving DE weapons development. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised and implemented to manage land use and environmental resources.

4.6.2.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. As a legislative action, the public land withdrawal renewal, in itself, would not have any direct or indirect impacts on geology and soils at NAWSCL. The analysis for potential impacts to geology and soils is presented in the subsections below.

Renewal of the land withdrawal and continuing operations at NAWSCL would result in continuation of the current status quo with respect to potential development of mineral resources on the Installation. Continuation of said status quo could be considered a lost economic opportunity and thus a form of socioeconomic impact, but it would not be an impact in the sense of altering baseline socioeconomic conditions.

Military Uses

Under the Proposed Action, increases in range flight events, airfield flight events, range ground activities, and munitions and energetics are proposed. Details regarding proposed military uses under this alternative are outlined in Table 2-2 in Chapter 2 of this EIS/LEIS. As noted in Section 4.6.1, the only military activities with the potential to affect soil resources are range ground activities and munitions and

energetics (also see discussion of potential impacts associated with wild horses and burros in Section 4.4.2.1.).

Ground-based activities occurring at NAWSCL include actions that support RDAT&E test and training events, CIED events, GTT events, and munitions and energetics, and facilities operations and maintenance activities. Target and test sites are highly disturbed and generally void of surface vegetation. Minor wind erosion of soils has occurred at some impact areas, primarily in the Baker, Charlie, and George ranges. The soil disturbance is within 328 feet (100 meters) of the eastern and northern borders of the impact areas and has not impacted existing land uses. Under the Proposed Action, the increase in munitions use at existing target and test sites would not create perceptible increases in impacts to soils. HE use would be limited to existing previously disturbed areas, with approximately 90 percent occurring at the Airport Lake LMU. Since increased use of target and test sites is not expected to result in a substantial change to soil characteristics, potential impacts would not be significant.

Under the Proposed Action, GTT activities would continue to be restricted to approved areas (see Section 2.3.1.2 Range Ground Events) throughout the NAWSCL ranges. Due to the relatively low intensity of use and limitation of GTT activities, potential impacts to soil resources due to increased GTT would not be significant.

Seabee training consists of water-well-drilling training and quarry training generally within established disturbed areas that have undergone environmental analysis for potential impacts. If undisturbed sites are to be used, they would undergo environmental analysis prior to drilling. Under the Proposed Action, it is anticipated that this training would be conducted at the current tempo. Therefore, potential impacts on geology and soils would not be significant.

DE, munitions expenditures, and energetic activities would increase in tempo but would occur within the same areas as they do currently. Under the Proposed Action, the increase in RDAT&E activities at existing target and test sites would not create perceptible increases in impacts to soils. Since increased use of target and test sites is not expected to result in a substantial change to soil characteristics, potential impacts would not be significant.

Nonmilitary Uses

Under the Proposed Action, existing Native American, geothermal, research and education, and recreational activities would continue at NAWSCL. Proposed nonmilitary uses falling into these general categories would continue to be considered on a case-by-case basis. Native American use, research and education activities, and recreational uses are conducted on pre-established roadways and in previously disturbed areas and, thus, would have a negligible effect on soil resources. Therefore, potential impacts on geology and soils as a result of these activities would not be significant.

The Proposed Action would not result in any changes to the Coso geothermal development. As discussed in detail in Section 3.6.7, numerous studies have been conducted in an attempt to define and characterize the Coso Hot Springs area. An independent hydrologic analysis recognized that changes have occurred at the hot springs that correlate temporally with the onset of geothermal production; however, it could not conclusively be determined whether the changes were due to the initiation of geothermal development or to natural fluctuations that have been observed at geothermal systems that have not been developed commercially (ITSI 2007). The available studies determined that no definitive link could be found that identifies geothermal plant operations as the cause of the observed physical changes at Coso Hot Springs. The DoN continues its monitoring requirements and continues to conduct hydrologic studies, as appropriate. Based on the findings of the studies, in combination with the ongoing use of the area by local tribes for their religious and traditional practices, the Proposed Action would not result in significant impacts to geology and soils.

CLUMP Implementation

Implementation of the CLUMP would formalize and integrate an update of the Installation's environmental planning and review processes. The environmental review process is applied to military and nonmilitary actions occurring on-installation, and includes new actions or substantial changes to existing uses or activities. This review process provides an analysis of actions that may impact soils, and would require that appropriate avoidance, minimization, or mitigation efforts be applied. As such, implementation of the CLUMP would represent a beneficial impact.

Cumulative Impacts

The activities that would occur under the Proposed Action are unlikely to lead to significant erosion potential in the project areas, and no significant impacts to geologic or soil resources are expected. On-installation construction projects (e.g., solar energy field and new school construction) or establishment of new training areas (e.g., expanded EOD training area) have some potential for impacts. Construction activities could result in soil disturbance and short-term exposure of the soil to wind or water erosion. However, the affected areas would be relatively level, the lack of precipitation in the region would result in the water erosion potential to be low, and standard construction practices to minimize wind erosion (e.g., watering disturbed soil) would be implemented; therefore, a no appreciable geologic impact from loss of soil is anticipated.

Provisions of the City of Ridgecrest General Plan would support low intensity and open space land uses near NAWSCL to help support compatibility with the NAWSCL mission, which would minimize potential impacts to geology and soils from development. Off-installation projects, including the Ridgecrest Solar Power Project, Deep Rose Geothermal Exploratory Project, Haiwee Geothermal Leasing Area, Digital 395 Project, and the proposed zeolite mine, have the potential for increasing soil erosion during implementation. These projects would occur in accordance with associated erosion management plans; therefore, potential impacts are not likely to be regionally significant. Although the other projects that would occur in the area are situated in Seismic Zone 4 (the zone with the highest seismicity), structures associated with these projects would be designed to meet strict seismic design standards established for Seismic Zone 4; therefore, no appreciable impact from constructing in a high seismicity area are anticipated.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative impacts to geology and soils as it relates to other military land withdrawal actions in the region.

Potential geology and soils impacts from off-installation development projects are localized or would affect areas that are distant from NAWSCL. The potential geologic impacts discussed above for the Proposed Action are not expected to increase in significance when considered in combination with impacts from other on- and off-installation actions. Therefore, activities under the Proposed Action are not expected to result in significant cumulative effects on soils or other geologic resources in combination with other projects in the region.

4.6.2.2 Mitigation Measures and Impact Avoidance and Minimization Measures

No mitigation measures or impact avoidance and minimization measures are proposed.

Impacts Summary

Since the land withdrawal is a renewal of a previously approved land withdrawal, it would not have any direct or indirect impact on geology and soils.

Target and test sites are highly disturbed and generally void of surface vegetation. Minor wind erosion of soils has occurred at some impact areas, primarily in the Baker, Charlie, and George ranges. Under the Propose Action, RDAT&E activities at existing target and test sites would not create perceptible increases in impacts to geology and soils. Due to the relatively low intensity of use and limitation of GTT activities, potential impacts to soil resources would not be significant. Seabee training generally occurs within established disturbed areas and would continue to be conducted at the current tempo. Therefore, impacts on geology and soils would not be significant.

Nonmilitary uses would continue to be considered on a case-by-case basis and would continue to be conducted on pre-established roadways and in previously disturbed areas. These uses would have a negligible effect on soil resources. Therefore, potential impacts on geology and soils would not be significant. The Proposed Action would not result in any changes to the Coso geothermal development. With no proposed changes to the current operations and ongoing monitoring, there would not be a significant impact to geology and soils.

The implemented CLUMP review process would provide an analysis of actions and would require that appropriate avoidance, minimization, or mitigation efforts be applied. The CLUMP would represent a beneficial impact.

Demolition, infrastructure improvements, and construction could result in soil disturbance and short-term exposure of the soil to wind or water erosion. The affected areas would likely be relatively level, the water erosion potential would be low, and wind erosion would not likely result in a significant geologic impact from loss of soil. Demolition activities would not have an impact on soils, as these areas are already disturbed. These projects would occur in accordance with associated construction site erosion management plans; therefore, potential impacts are not likely to be regionally significant. The Proposed Action is not expected to result in significant cumulative effects on soils or other geologic resources in combination with other cumulative projects.

Continuing mission activities would not result in substantial ground disturbance or increased erosion potential; therefore, overall potential impacts to geology and soils from implementation of the Proposed Action would not be significant (Table 4.6-1).

4.6.3 Baseline Alternative/Updated No Action Alternative (Alternative 2)

The Baseline Alternative/Updated No Action Alternative includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013) with continuation of military activities at current levels. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised, as appropriate, and implemented to manage land use and environmental resources at NAWSCL.

4.6.3.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. As a legislative action, the public land withdrawal renewal, in itself, would not have any direct or indirect impacts on geology and soils at NAWSCL. The analysis for potential impacts to geology and soils is presented in the subsections below.

Table 4.6-1
Proposed Action (Alternative 1) - Summary of Geology and Soils Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Geothermal Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Overall Summary	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.

Military Uses

Under the Baseline Alternative/Updated No Action Alternative, established military RDAT&E, training and support activities, and associated military land use would continue at existing levels and within areas currently designated for such uses. Additional information regarding existing levels of military use is outlined in Table 2-2 in Chapter 2 of this EIS/LEIS.

Ground-based activities occurring at NAWSCL include actions that support RDAT&E and training events, GTT activities, munitions and energetics, and facilities operations and maintenance activities. Target and test sites are highly disturbed and generally void of surface vegetation. Minor wind erosion of soils has occurred at some impact areas, primarily in the Baker, Charlie, and George ranges. The soil disturbance is within 328 feet (100 meters) of the eastern and northern borders of the impact areas, and has not impacted existing land uses. Because ongoing target and test site use occurs within previously disturbed areas, continuation of existing levels of ground-disturbing activity is expected to have a negligible effect on the rate of soil erosion (also see discussion of potential impacts associated with wild horses and burros in Section 4.4.2.1.). Therefore, potential impacts to geology and soils related to the current use of target and test sites would not be significant.

Under the Baseline Alternative/Updated No Action Alternative, no increase in GTT activities would occur and GTT activities would continue to be restricted to approved areas (see Section 2.3.2.2 Range Ground Events) throughout the NAWSCL ranges. Due to the relatively low intensity of use occurring only in previously disturbed areas, potential impacts to soil resources due to GTT would not be significant.

Seabee training consists of water-well-drilling training and quarry training generally within established disturbed areas that have undergone environmental analysis for potential impacts. If undisturbed sites are to be used, they would undergo environmental analysis prior to drilling. Therefore, potential impacts on geology and soils would not be significant.

DE, munitions expenditures, and energetic activities would remain within the existing footprints and at the current tempo. Therefore, potential impacts on geology and soils would not be significant.

Nonmilitary Uses

Under the Baseline Alternative/Updated No Action Alternative, existing Native American, geothermal, research and education, and recreational activities would continue at NAWSCL. Ongoing nonmilitary uses falling into these general categories would continue to be considered on a case-by-case basis. Native American use, research and education activities, and recreational uses would continue to be conducted on pre-established roadways and in previously disturbed areas and, thus, have a negligible effect on soil resources. Therefore, potential impacts on geology and soils as a result of these activities would not be significant.

As discussed under the Proposed Action and in Section 3.6.7, numerous studies have been conducted in an attempt to define and characterize the Coso Hot Springs area. The available studies determined that no definitive link could be found that identifies geothermal plant operations as the cause of the observed physical changes at Coso Hot Springs. The DoN continues its monitoring requirements and continues to conduct hydrologic studies, as appropriate. Based on the findings of the studies, in combination with the ongoing use of the area by local tribes for their religious and traditional practices, the Baseline Alternative/Updated No Action Alternative would not result in significant impacts to geology and soils.

CLUMP Implementation

Implementation of the CLUMP would result in beneficial impacts due to implementation of the Installation's environmental review processes. This would serve to minimize and mitigate potential impacts to geology and soils, and thus represent a beneficial impact.

Cumulative Impacts

Cumulative impacts anticipated under the Baseline Alternative/Updated No Action Alternative would be similar to the likely cumulative impacts associated with the Proposed Action, only to a somewhat lesser extent or intensity, insofar as NAWSCL's cumulative impacts would be expected to be somewhat lower under the Baseline Alternative/Updated No Action Alternative because this alternative would not include the potential increase in RDAT&E and training activities.

The Baseline Alternative/Updated No Action Alternative would not result in any changes to geology and soils at NAWSCL. On-installation construction projects (e.g., solar energy field and new school construction) or establishment of new training areas (e.g., expanded EOD training area) could result in soil disturbance and short-term exposure of the soil to wind or water erosion. However, the affected areas would be relatively level, the lack of precipitation in the region would result in the water erosion potential to be low, and standard construction practices to minimize wind erosion (e.g., watering disturbed soil) would be implemented; therefore, no appreciable geologic impact from loss of soil is anticipated.

Provisions of the City of Ridgecrest General Plan would support low intensity and open space land uses near NAWSCL to help support compatibility with the NAWSCL mission, which would minimize potential impacts to geology and soils from development. Off-installation projects have the potential for increasing soil erosion during implementation. However, these projects would occur in accordance with associated erosion management plans; therefore, potential impacts to geology and soils are not likely to be regionally significant. Although the other projects that would occur in the area are situated in Seismic Zone 4 (the zone with the highest seismicity), structures associated with these projects would be designed to meet strict seismic design standards established for Seismic Zone 4; therefore, no appreciable impact from constructing in a high seismicity area are anticipated.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative impacts to geology and soils as it relates to other military land withdrawal actions in the region.

Geology and soils impacts from off-installation development projects are localized or would affect areas that are distant from NAWSCL. The potential geologic impacts discussed above for the Baseline Alternative/Updated No Action Alternative are not expected to increase in significance when considered in combination with impacts from other on- and off-installation actions. Therefore, activities under the Baseline Alternative/Updated No Action Alternative are not expected to result in significant cumulative effects on soils or other geologic resources in combination with other projects in the region.

4.6.3.2 Mitigation Measures and Impact Avoidance and Minimization Measures

No mitigation measures or impact avoidance and minimization measures are proposed.

Impacts Summary

Since the land withdrawal is a renewal of a previously approved land withdrawal, it would not have any direct or indirect impact on geology and soils.

Because ongoing target and test site use occurs within previously disturbed areas, continuation of existing levels of ground-disturbing activity is expected to have a negligible effect on the rate of soil erosion. Therefore, potential impacts to geology and soils related to the current use of target and test sites would not be significant. Due to the relatively low intensity of use occurring only in previously disturbed areas, potential impacts to soil resources due to GTT would not be significant. Seabee training consists of water-well-drilling training and quarry training generally within established disturbed areas that have undergone environmental analysis for potential impacts. If undisturbed sites are to be used, they would undergo environmental analysis prior to drilling. Therefore, potential impacts on geology and soils would not be significant.

Continued nonmilitary uses would continue to be conducted on pre-established roadways and in previously disturbed areas and, thus, have a negligible effect on soil resources. Potential impacts on geology and soils as a result of these activities would not be significant. No changes would occur to geothermal operations and with ongoing monitoring, there would not be a significant impact to geology and soils.

The implemented CLUMP review process would provide an analysis of actions and would require that appropriate avoidance, minimization, or mitigation efforts be applied. The CLUMP would represent a beneficial impact.

The Baseline Alternative/Updated No Action Alternative would not result in any changes to geology and soils at NAWSCL. Therefore, implementation of the Baseline Alternative/Updated No Action Alternative in addition to other cumulative projects would not have significant cumulative impacts to geology and soils.

Continuing mission activities would not result in substantial ground disturbance or increased erosion potential; therefore, overall potential impacts to geology and soils from implementation of the Baseline Alternative/Updated No Action Alternative would not be significant (Table 4.6-2).

Table 4.6-2
Baseline Alternative/Updated No Action Alternative (Alternative 2) - Summary of Geology and Soils Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Geothermal Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Overall Summary	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.

4.6.4 No Action Alternative (Alternative 3)

Because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of “no action” conditions at NAWSCL; therefore, the discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed (please see discussion in Section 2.3.3). For the purposes of the Final EIS/LEIS, the Baseline Alternative/Updated No Action Alternative is considered to effectively represent “no action” conditions or status quo (see Section 4.6.3).

4.7 WATER QUALITY AND HYDROLOGY

This section identifies potential impacts to surface water and groundwater resources, including water quality and supply that may result from implementation of the Proposed Action and alternatives. The impact analysis compares projected conditions after implementation of each alternative to the affected environment and focuses on those activities that have the potential to adversely affect water quality and hydrology.

4.7.1 Approach to Analysis

Factors considered in determining whether an alternative would have significant impacts on water quality and hydrology include the extent or degree to which an action would significantly affect surface water quality or supply or significantly affect groundwater quality or supply.

Each of the alternatives was analyzed to identify those actions that could affect the quality or supply of surface and groundwater resources at NAWSCL. Military uses such as range flight events and airfield flight events are not addressed further in this section since they are conducted in the airspace above NAWSCL and would not be expected to impact water quality and hydrology. Therefore, the impact analysis of water quality and hydrology centers on activities associated with range ground activities.

4.7.2 Proposed Action (Alternative 1)

The Proposed Action includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013); revision and implementation of the CLUMP; and accommodation of an increase in RDAT&E and training activities of up to 25 percent, expansion of unmanned aerial and surface systems, and expansion of existing and introduction of evolving DE weapons development. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised and implemented to manage land use and environmental resources.

4.7.2.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. As a legislative action, the public land withdrawal renewal, in itself, would not have any direct or indirect impacts on water resources at NAWSCL. The analysis for potential impacts to water resources is presented in the subsections below.

Military Uses

Under the Proposed Action, increases in range flight events, airfield flight events, range ground activities, and munitions and energetics are proposed. Details regarding proposed military uses under this alternative are outlined in Table 2-2 in Chapter 2 of this EIS/LEIS. As noted in Section 4.7.1, the only military activities with the potential to affect water quality and hydrology are those potentially affecting resources on the ground (i.e., range ground activities). Ground-based activities occurring at NAWSCL include actions that support RDAT&E and training events, including target and test site use, energetic tests, CIED tests, EOD training, test tracks, unmanned ground systems, and GTT, as well as DE activities (HEL and HPM) and munitions expenditures.

Range Ground Events

No target or test sites are located on or adjacent to surface water resources such as springs, seeps, or riparian areas. The closest target or test site to a riparian area is the Area R test site, which is located approximately 1 mile (1.6 kilometers) from the Lark Seep drainage channel (also see discussion of

potential impacts associated with wild horses and burros in Section 4.4.2.1.). Since activities do not take place in proximity to surface water resources, the proposed increased use of munitions at existing target and test sites would not affect surface water quality or supply; therefore, potential impacts to these resources would not be significant.

The use of target and test sites typically would not require the consumption of water and, therefore, has no effect on groundwater supply. However, static firings of rocket motors consume an average of 200,000 gallons (757,100 liters) per event and there are approximately 2 to 3 tests per year. This amount of water is included within the historic use patterns for NAWSCL and represents a minor portion of overall water usage at NAWSCL (e.g., during the summer, water usage at NAWSCL can exceed 4 mgd). The annual use of water for static firing tests would be well within existing water supply capacity and would not significantly affect existing groundwater supply. The water is used during the tests to provide protection of the flame chutes at the static firing sites by cooling the rocket motor plume. The majority of the water is evaporated during the test by the high temperatures of the rocket motor plume. Any remaining water is left to evaporate from the flame chutes. These tests occur in the Skytop area located in the Ordnance Test and Evaluation LMU. This area is isolated from any groundwater sources and, therefore, actions would not affect groundwater quality.

Only one portion of the Installation has target and test sites located in areas that could affect potable groundwater quality. Targets in the Baker LMU are located in an area identified as a potential groundwater recharge zone. The Baker LMU has eight individual target impact areas. The use of munitions for test and training purposes creates debris called range residue, or MPPEH. These materials can include the remnants of bombs, bullets, missiles, and targets, as well as the chemical residue of incomplete combustion of the explosive or pyrotechnic charge of an HE or inert round. Routine MPPEH removal is performed after test or training events at target areas to provide a clear arena for subsequent exercises and to ensure that areas are safe for range operations personnel.

Factors that decrease the potential for these materials to affect groundwater resources and/or surface water quality include the following:

- Cleanup of residue in target impact areas;
- A limited physical mechanism to deliver residual materials to water-bearing strata; and
- The rapid degradation of chemical residues in arid environments.

The potential for munitions residue to migrate into groundwater strata is dependent on a number of factors, including the chemical and physical properties of the residue, soil type, depth to groundwater, and local climate (e.g., amount of precipitation). Given the arid climate at NAWSCL, the extensive hydraulic barriers (clay layers) between surface targets and water-bearing strata, and the significant depth to groundwater (50 to 200 feet [15.24 and 60.98 meters] below ground surface), the likelihood of munitions residuals affecting the groundwater supply is, and would continue to be, very low (Stoner 2011).

Studies conducted by the U.S. Army at the Yuma Proving Grounds in Arizona focused on the potential for munitions residue to migrate from HE impact areas. The study (U.S. Army 1999) focused on HE target impact areas and found that munitions residue was not detected in insects, rodents, vegetation, groundwater, or air at the target impact areas. The study concluded that munitions residue is not accumulating in soil, air, groundwater, plants, or animals in the target vicinity, and that the residue did not appear to be migrating through surface wash areas. Because NAWSCL mission conditions and climate are similar to those at the Yuma ranges, results of this study are relevant to NAWSCL. Based on this focused study, the extremely dry climate conditions, the hydraulic barriers to groundwater aquifers, and

the fact that MPPEH is removed after conducting tests, the increased use of munitions testing throughout the NAWSCL ranges would not have significant impacts on groundwater quality.

Ground Troop Training. The proposed increase in GTT activities would continue to be restricted to approved areas (see Section 2.3.1.2 Range Ground Events) throughout the NAWSCL ranges. Troops are advised of the sensitivity of surface water resources in pre-operation briefings, and are required to avoid these areas during their training activities. Due to the pre-training briefings and the nature of the activities, water resources would not be adversely affected and an increase in the tempo of these activities would not have significant impacts on surface water quality and supply.

Increases in GTT activities would result in minor increase in water use by the Installation since only 11 new small group training events would be added and bottled water is brought in as part of GTT supplies. Through CLUMP revision, it would be anticipated that water quality protection and conservation measures would continually evolve and likely incorporate more protective actions for area resources. Similarly, compliance with existing regulations would also serve to address and protect any potential impacts to hydrology and water quality. Therefore, this small increase in GTT exercises would have a negligible effect on total water demand, and would not significantly affect groundwater supply or quality.

The Seabees would continue to conduct water-well-drilling training and quarry training (including blast training). Although Seabee well-drilling training activities would potentially occur over groundwater recharge areas, routine precautions for groundwater protection (e.g., standard drilling practices and well construction) would be in place. Similarly, blasting would be expected to be confined to areas without sensitive resources. (Sensitive areas include shallow or intermediate groundwater aquifers where blasting could result in damage to aquifer geology.) In addition, potentially hazardous residual materials would be removed from the area after activities are completed. Because such protocols would be in place to avoid potential impacts, and because the amount of water consumed during these activities would be negligible, potential impacts to water quality and hydrology would not be significant under the Proposed Action.

SWRCB Order R6T-2008-0023 regulates discharges that are a low threat to water quality. A monitoring and reporting program is required by this order for the following:

- Construction dewatering;
- Well construction and pump testing of aquifer supplies;
- Hydrostatic testing;
- Maintenance, repair, and disinfection of potable water supply pipelines, tanks, reservoirs, etc.;
- Water treatment plant backflushing, residuals, and wasting;
- Fire hydrant testing or flushing; and
- Hydrostatic testing of newly constructed and yet-to-be-used pipelines, tanks, and reservoirs used for purposes other than potable water supply (gas, oil, reclaimed water, etc.).

These types of activities may increase as a result of the Proposed Action. However, the protocols for implementing these activities must be compliant to SWRCB Order R6T-2008-0023. Through compliant implementation of these activities, the Proposed Action would not have a significant impact on surface and ground water quality.

The increase in transient personnel would also result in an increase in the production of wastewater. Any increase in wastewater production would require increases in the activities associated with its treatment.

SWRCB Order 97-10-DWQ regulates discharges from small domestic wastewater treatment facilities to land. Any discharges would be required to comply with SWRCB Order 97-10-DWQ. As described above, just as the small increase in water use would be negligible compared to the total demand, the small increase in wastewater treatment production would be negligible compared to the total volume treated on-installation. By complying with SWRCB Order 97-10-DWQ and because of the negligible volume increase, the Proposed Action would not have a significant impact on surface water and groundwater quality.

Nonmilitary Uses

Under the Proposed Action, existing Native American, geothermal, research and education, and recreational activities would continue at NAWSCL. Nonmilitary uses falling into these general categories would continue to be considered on a case-by-case basis. Native American use, research and education activities, and recreational uses are conducted on pre-established roadways and in previously disturbed areas, and, thus, would have a negligible effect on water quality and hydrology. Therefore, potential impacts on water quality and hydrology as a result of these activities would not be significant.

Geothermal

The Proposed Action would not result in any changes to the Coso geothermal development. As discussed in detail in Section 3.6.7, numerous studies have been conducted in an attempt to define and characterize the Coso Hot Springs area. An independent hydrologic analysis recognized that changes have occurred at the hot springs that correlate temporally with the onset of geothermal production; however, it could not conclusively be determined whether the changes were due to the initiation of geothermal development or to natural fluctuations that have been observed at geothermal systems that have not been developed commercially (ITSI 2007). The available studies determined that no definitive link could be found that identifies geothermal plant operations as the cause of the observed physical changes at Coso Hot Springs. The DoN continues its monitoring requirements and continues to conduct hydrologic studies, as appropriate. Based on the findings of the studies, in combination with the ongoing use of the area by local tribes for their religious and traditional practices, the Proposed Action would not result in significant impacts to water quality and hydrology.

Darwin Community Services District

The Darwin Community Services District has rights to access its historical water source, Coso Cold Springs, which is within NAWSCL boundaries. A 5-year access agreement was approved in November 2010 by NAWSCL that allows the Darwin Community Services District access to its water source. The Darwin Community Services District is seeking a renewed agreement to access the spring in perpetuity such that routine and emergency maintenance can be performed on the dirt access road when needed. The roadway is currently in need of regrading and erosion damage repair, which is likely contributing to downstream sedimentation around this local water source. Although no impacts to this water source would be expected from the increase in NAWSCL activities, the maintenance needed to repair and stabilize the access road could be addressed as part of the overall construction efforts. In accordance with the statewide Construction General Permit (Order 20009-0009-DWQ), BMPs would be required for construction repairs, as well as post-construction stabilization for long-term protection. However due to the fact that waters of the U.S. are not present at NAWSCL, a Notice of Intent for Storm Water Permit coverage would not be submitted to the Water Board.

CLUMP Implementation

Under the Proposed Action, implementation of the CLUMP would have a positive impact on water quality and hydrology since the Installation's management priorities, as established in the INRMP, would be integrated into land use decisions that may affect water quality and hydrology. Implementing the CLUMP would enhance the conservation and protection of NAWSCL surface water resources, since they would be identified and included in the Installation's GIS database. This information would be used to ensure

that new and ongoing actions consider these resources, and avoid or minimize potential effects. The CLUMP would also incorporate the management actions defined in the existing cooperative groundwater management agreement between the Installation and other participating water purveyors. Therefore, implementation of the CLUMP would have a beneficial impact on water quality and hydrology.

Cumulative Impacts

The activities that would occur under the Proposed Action are unlikely to lead to significant impacts to water quality and hydrology at NAWSCL. Based on the scope and types of on-installation construction projects (e.g., solar energy field and new school construction) and establishment of new training areas (e.g., expanded EOD training area), they are not expected to significantly impact water resource supply or quality. Provisions of the City of Ridgecrest General Plan would support low intensity and open space land uses near NAWSCL to help support compatibility with the NAWSCL mission, thus helping to control potential effects to water resources in the area. Off-installation projects that include construction and demolition (e.g., Ridgecrest Solar Power Project, Deep Rose Geothermal Exploratory Project, Haiwee Geothermal Leasing Area, Digital 395 Project, and the proposed zeolite mine) could result in local, short-term impacts to surface water quality. Short-term effects could include localized erosion and possible increases in turbidity from runoff. These projects would occur in accordance with associated environmental and water management plans; therefore, potential impacts are not likely to be regionally significant.

There are potential groundwater concerns associated with the Deep Rose Geothermal Exploratory Project and the Haiwee Geothermal Leasing Area. Groundwater extraction for consumptive use during exploration, development, and production would likely be permitted, but controlled or restricted by stipulation to minimize potential groundwater impacts. Short-term impacts from groundwater extraction needs (estimated at 10 acre-ft/yr) for exploration, development, and dust control are not expected to be significant. However, long-term groundwater extraction (up to 4,680 acre-ft/yr) from the local, near surface groundwater aquifer, to augment geothermal reservoir fluid levels would likely have significant long-term impacts on groundwater resources in Rose Valley (BLM 2012). Groundwater requirements could increase the depth to groundwater near existing water supply wells in the central portion and north end of Rose Valley. The effects of such pump rates could include increased pumping lift, higher energy costs, and potentially causing some shallower wells to go dry. Also, long-term pumping (up to 30 years) could cause a reduction in groundwater flow toward Little Lake Ranch (BLM 2012). Potential impacts to the Coso Hot Springs from the proposed geothermal projects are unlikely. This is due to the distance between the Coso Hot Springs and the Deep Rose Geothermal Exploratory Project and Haiwee Geothermal Leasing Area, the likely discontinuity between geothermal resources between the two areas, and the observed isotopic differences in the waters (BLM 2012).

The Ridgecrest Solar Power Project is a dry-cooled facility that would use approximately 150 acre-feet of groundwater per year supplied by the IWVWD. In total, the Project demand is about 1.6 percent of the total demand for IWVWD. In order to keep water use as low as practicable, the Project would recycle process makeup water for a savings of about 25 percent of the annual consumptive use and would consider implementing water conservation offsets to reduce potential impacts of the Project on water resources in the region. The Project site is located in the IWV Groundwater Basin, which is considered to be in an overdraft condition. Modeling of water use for the IWVWD was used to assess potential impacts from the proposed Project, which revealed that the operational use would not increase drawdown over the life of the Project (30-year period) by comparison to a non-Project condition (Solar Millennium 2009). Therefore, no significant impact to regional groundwater from the Ridgecrest Solar Power Project is anticipated.

Potential impacts from agricultural development to existing groundwater wells in the area (operated by the DoN, Indian Wells Valley Water District and private home owners) include; possible declines in

groundwater levels (which impact pumping efficiency costs, need for deepening the existing wells, and/or the drilling of new wells as existing wells become dry) and the threat of increased potential for the intrusion of lower quality groundwater (increases of total dissolved solids and inorganic chemical increases due to horizontal and/or vertical migration of groundwater due to groundwater gradient changes).

Two recent (December 2013) groundwater model simulations completed by the DoN predict groundwater levels (through 2057) using 2012 water production numbers including 13,500 acre-feet of new agricultural water consumption. The model simulations predict water levels decreasing by over 4 feet per year in the areas adjacent to the agricultural water production, which would impact many domestic wells in the area. The model results also show coalescing cones of depression and groundwater gradient changes within the next 15 years. The nearest DoN groundwater production wells are located approximately 2 miles (3.2 kilometers) southeast of the nearest new agricultural water well where the simulations exhibit increased water level declines of an additional 1 to 2 feet per year. The recent active agricultural development includes almost 3,000 acres (1,214 hectares) of land planted with mostly pistachios and limited alfalfa. The recently developed land includes scattered plots bounded by Highway 395 to the south, the Inyo County line to the north, Highway 14/395 along the west, and adjacent to Brown Road along the eastern perimeter. All the recently developed land is located within Kern County.

The Kern County Planning Department finished their Water Availability and Conservation Report in January, 2014 (Todd Engineers 2014). The report compiled information from existing publications and formulated hydrogeologic concepts as well as future planning options for the IWV. NAWSCL has reviewed the report and concurs with the hydrogeologic conceptual model of the Valley being a “closed” basin and that the groundwater basin has experienced a groundwater deficit (discharge exceeds recharge) since 1959. NAWSCL also concurs with the need for immediate urgency well ordinances and that land use be commensurate with the water resources required to support its development until such time that a supplemental water source can be found with terms agreeable to all stakeholders in the Valley. NAWSCL is working with the other Stakeholders, including the County of Kern, to implement a plan for maximizing/enhancing the regional aquifer within the IWV.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative impacts to water resources as it relates to other military land withdrawal actions in the region.

Hydrogeologic impacts from the recent agricultural developments are expected to have immediate effects to water levels (water levels decreasing 100 to 200 feet by 2057) and possibly water quality degradation in the immediate areas near the agricultural production wells. Installation wells are expected to experience slightly accelerated water level declines and possibly water quality degradation as time progresses. Per DoN groundwater model predictions, groundwater gradient changes near the Installation groundwater wells would begin to occur around 2025. Also, desaturation of the upper part of the aquifer is expected to continue at a moderate pace, reaching about 20 percent of the aerial extent of the unit by 2057.

The DoN is working with the Kern County and local Stakeholders to develop and implement a plan for maximizing/enhancing the regional aquifer within the IWV and exploring options for securing a supplemental water supply. The potential impacts discussed above for the Proposed Action are not expected to contribute appreciably in significance when considered in combination with impacts from other on- and off-installation actions as the Proposed Action is not anticipated to increase water use at NAWSCL. However, the Deep Rose Geothermal Exploratory Project, the Haiwee Geothermal Leasing

Area, and agricultural development are likely to result in significant impacts on groundwater resources in Rose Valley and IWV from long-term groundwater extraction from the local groundwater aquifer.

4.7.2.2 Mitigation Measures and Impact Avoidance and Minimization Measures

Mitigation Measures

No mitigation measures are proposed.

Impact Avoidance and Minimization Measures

Since FY 2007 NAWSCL has actively engaged in water conservation practices that yielded a reduction of over 49 percent of the FY 2007 water consumption baseline. As impact mitigation avoidance measures for groundwater resources, NAWSCL continues proactive water conservation practices of replacing turf and other high water-use vegetation with xeriscaped landscapes, repairing leaking pipes, re-lining water storage reservoirs, reducing distribution line flushing from hydrants and valves during drought, and installation of dual flush toilets and low-flow shower heads/faucets. Further, NAWSCL would also continue to:

- Limit and monitor additional large-scale pumping in areas designated in the IWV Cooperative Groundwater Management Plan;
- Distribute new groundwater production in a manner that minimizes adverse effects on existing use patterns;
- Advocate the use of treated water, reclaimed water, and recycled, gray, and lower-quality waters for appropriate applications;
- Explore the utility of other groundwater management methods, such as water transfer, banking, imports, and replenishment. Continue cooperative groundwater data-acquisition and coordination efforts; and
- Explore potential for improvements to the cooperative management framework.

Impacts Summary

Since the land withdrawal is a renewal of a previously approved land withdrawal, it would not have any direct or indirect impact on water resources at NAWSCL.

No target or test sites are located on or adjacent to surface water resources such as springs, seeps, or riparian areas. Therefore, the proposed increased use of munitions at existing target and test sites would not significantly impact surface water quality or supply. The groundwater usage for target and test sites is included within the historic use patterns for NAWSCL and represents a minor portion of overall water usage at NAWSCL and would not significantly affect existing groundwater supply. Only one portion of the Installation has target and test sites located in areas that could affect potable groundwater quality. Targets in the Baker LMU are located in an area identified as a potential groundwater recharge zone. Routine MPPEH removal would continue to be performed after test or training events at target areas. The potential for munitions residue to migrate into groundwater strata and affect the groundwater supply is, and would continue to be, very low. Considering the extremely dry climate conditions, the hydraulic barriers to groundwater aquifers, and the fact that MPPEH is removed after conducting tests, the increased use of munitions testing throughout the NAWSCL ranges would have no significant impact on groundwater quality.

GTT activities would result in minor increase in water use by the Installation. Due to continued compliance with existing regulations, GTT pre-training briefings, and the nature of the activities, water resources would not have less-than-significant impacts on surface water quality and supply. The Seabees well-drilling training activities would potentially occur over groundwater recharge areas. Due to routine precautions for groundwater protection and the negligible amount of water consumed during these activities, potential impacts to water quality and hydrology would not be significant under the Proposed Action.

The increase in transient personnel would result in a small increase in the generation of wastewater. This would be negligible compared to the total volume treated on-installation. By complying with SWRCB Order 97-10-DWQ and because of the negligible volume increase, the Proposed Action would not have a significant impact on surface water and groundwater quality.

Nonmilitary uses would continue to have a negligible effect on water quality and hydrology. Therefore, potential impacts on water quality and hydrology as a result of these activities would not be significant.

No changes to geothermal operations are proposed under the Proposed Action, and no changes would be anticipated with respect to the nature and overall scope of current operations apart from routine and recurring activities (e.g., potential shutting down of existing wells or opening of new wells within approximately the current production area). With no proposed operational changes and the ongoing monitoring, there would be no significant impact on the geothermal characteristics and quality of the area.

The CLUMP would incorporate the management actions defined in the existing cooperative groundwater management agreement between the Installation and other participating water purveyors and water quality protection and conservation measures. The implementation of the CLUMP would have a beneficial impact on water quality and hydrology.

Given that the Proposed Action would not result in any changes in water resources, this alternative would not result in cumulatively significant impacts to water quality and hydrology in combination with other potentially cumulative projects. The cumulative projects could result in short-term effects such as localized erosion, possible increases in turbidity of runoff, and hydrology. These projects include measures such as water conservation offsets to reduce potential impacts on water resources. However, the Deep Rose Geothermal Exploratory Project, the Haiwee Geothermal Leasing Area, and agricultural development are likely to result in significant impacts on groundwater resources in Rose Valley and IWV from long-term groundwater extraction.

Continuation of mission activities would not result in adverse effects to water quality or supply; therefore, overall potential impacts to water resources from implementation of the Proposed Action would not be significant (Table 4.7-1).

4.7.3 Baseline Alternative/Updated No Action Alternative (Alternative 2)

The Baseline Alternative/Updated No Action Alternative includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013) with continuation of military activities at current levels. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised, as appropriate, and implemented to manage land use and environmental resources at NAWSCL.

Table 4.7-1
Proposed Action (Alternative 1) – Summary of Water Quality and Hydrology Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
Significant impacts.	No mitigation measures. NAWSCL would continue proactive water conservation practices of replacing turf and other high water-use vegetation with xeriscaped landscapes, repairing leaking pipes, re-lining water storage reservoirs, reducing distribution line flushing from hydrants and valves during drought, and installation of dual flush toilets and low-flow shower heads/faucets. Further, NAWSCL would also continue to: • Limit and monitor additional large-scale pumping in areas designated in the IWV Cooperative Groundwater Management Plan; • Distribute new groundwater production in a manner that minimizes adverse effects on existing use patterns; • Advocate the use of treated water, reclaimed water, and recycled, gray, and lower-quality waters for appropriate applications; • Explore the utility of other groundwater management methods, such as water transfer, banking, imports, and replenishment. Continue cooperative groundwater data-acquisition and coordination efforts; and • Explore potential for improvements to cooperative management framework.
Overall Summary	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.

4.7.3.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. As a legislative action, the public land withdrawal renewal, in itself, would not have any direct or indirect impacts on water resources at NAWSCL. The analysis for potential impacts to water resources is presented in the subsections below.

Military Uses

Under the Baseline Alternative/Updated No Action Alternative, established military RDAT&E, training and support activities, and associated military land use would continue at existing levels and within areas currently designated for such uses. Additional information regarding existing levels of military use is outlined in Table 2-2 in Chapter 2 of this EIS/LEIS.

Range Ground Events

Ground-based activities occurring at NAWSCL include actions that support RDAT&E and training events, GTT activities, and facilities operations and maintenance activities.

No target or test sites are located on or adjacent to surface water resources such as springs, seeps, or riparian areas, as discussed in Section 4.7.2 (also see discussion of potential impacts associated with wild horses and burros in Section 4.4.2.1). Since activities do not take place in proximity to surface water resources, the current use of munitions at existing target and test sites would not affect surface water quality or supply; therefore, potential impacts to these resources would not be significant.

The use of target and test sites typically would not require the consumption of water other than the static firings of rocket motors, which would not consume water volumes that would significantly affect existing groundwater supply or quality (see Section 4.7.2 for details).

Targets in the Baker Range LMU are located in an area identified as a potential groundwater recharge zone. However, based on the inert nature of most of the munitions testing, the established protocol for removing munitions residues after testing, and the low potential for chemical migration through hundreds of feet of clay-infused strata, the potential for surface water or groundwater quality/quantity impacts from the Baseline Alternative/Updated No Action Alternative would not be significant (see Section 4.7.2 for details).

Ground Troop Training. Under the Baseline Alternative/Updated No Action Alternative, GTT activities would continue to be restricted to approved areas (see Section 2.3.1.2 Range Ground Events) throughout the NAWSCL ranges and would not result in any increase in water use by the Installation that would have any impact on surface water or groundwater supply or quality. GTT activities would remain unchanged from present day conditions.

The Seabees would continue to conduct water-well-drilling training and quarry training at current levels. As discussed in Section 4.7.2, Seabee well-drilling training activities could occur over groundwater recharge areas. However, routine precautions for groundwater protection would be in place. Similarly, blasting would be confined to areas without sensitive groundwater resources and residuals would be removed after activities are completed. In addition, the monitoring and reporting program required by SWRCB Order R6T-2008-0023 would further decrease the potential for significant impacts to water resources. Through compliant implementation of these activities, the Baseline Alternative/Updated No Action Alternative would have no significant impact on surface water and groundwater quality.

Nonmilitary Uses

Under the Baseline Alternative/Updated No Action Alternative, existing Native American, geothermal, research and education, and recreational activities would continue at NAWSCL. Native American uses, research and education, and recreational uses would result in additional personal water consumption; however, amounts would be negligible and would not significantly affect water supply. In addition, these uses have no significant impacts on water quality.

Similar to the Proposed Action, the Baseline Alternative/Updated No Action Alternative would not result in any changes to the Coso geothermal development. As discussed in detail in Section 3.6.7, numerous studies have been conducted in an attempt to define and characterize the Coso Hot Springs area. An independent hydrologic analysis recognized that changes have occurred at the hot springs that correlate temporally with the onset of geothermal production; however, it could not conclusively be determined whether the changes were due to the initiation of geothermal development or to natural fluctuations that have been observed at geothermal systems that have not been developed commercially (ITSI 2007). The available studies determined that no definitive link could be found that identifies geothermal plant operations as the cause of the observed physical changes at Coso Hot Springs. The DoN continues its monitoring requirements and continues to conduct hydrologic studies, as appropriate. Based on the findings of the studies, in combination with the ongoing use of the area by local tribes for their religious and traditional practices, the Baseline Alternative/Updated No Action Alternative would not result in significant impacts to water quality and hydrology.

CLUMP Implementation

Implementation of the CLUMP would have a positive effect by protecting and conserving water resources in accordance with the management guidelines in the INRMP and respective management agreements, and by implementing improved planning and decision support processes at NAWSCL. Therefore, implementation of the CLUMP would represent a beneficial impact to water resources.

Cumulative Impacts

Cumulative impacts anticipated under the Baseline Alternative/Updated No Action Alternative would be similar to the likely cumulative impacts associated with the Proposed Action, only to a somewhat lesser extent or intensity, insofar as NAWSCL's cumulative impacts would be expected to be somewhat lower under the Baseline Alternative/Updated No Action Alternative because this alternative would not include the potential increase in RDAT&E and training activities.

The Baseline Alternative/Updated No Action Alternative would not result in any changes to water quality or hydrology at NAWSCL. Based on the scope and types of on-installation construction projects (e.g., solar energy field and new school construction) and establishment of new training areas (e.g., expanded EOD training area), they are not expected to significantly impact water resource supply or quality. Provisions of the City of Ridgecrest General Plan would support low intensity and open space land uses near NAWSCL to help support compatibility with the NAWSCL mission, thus helping to control potential effects to water resources in the area. Off-installation projects that include construction and demolition (e.g., Ridgecrest Solar Power Project, Deep Rose Geothermal Exploratory Project, Haiwee Geothermal Leasing Area, Digital 395 Project, and the proposed zeolite mine) could result in local, short-term impacts to surface water quality. Short-term effects could include localized erosion and possible increases in turbidity of runoff. These projects would occur in accordance with associated environmental and water management plans; therefore, potential impacts are not likely to be regionally significant.

There are potential groundwater concerns associated with the Deep Rose Geothermal Exploratory Project and the Haiwee Geothermal Leasing Area. Groundwater extraction for consumptive use during exploration, development, and production would likely be permitted, but controlled or restricted by stipulation to minimize potential groundwater impacts. Short-term impacts from groundwater extraction

needs (estimated at 10 acre-ft/yr) for exploration, development, and dust control are not expected to be significant. However, long-term groundwater extraction (up to 4,680 acre-ft/yr) from the local, near surface groundwater aquifer, to augment geothermal reservoir fluid levels would likely have significant long-term impacts on groundwater resources in Rose Valley (BLM 2012). Groundwater requirements could increase the depth to groundwater near existing water supply wells in the central portion and north end of Rose Valley. The effects of such pump rates could include increased pumping lift, higher energy costs, and potentially causing some shallower wells to go dry. Also, long-term pumping (up to 30 years) could cause a reduction in groundwater flow toward Little Lake Ranch (BLM 2012). Potential impacts to the Coso Hot Springs from the proposed geothermal projects are unlikely. This is due to the distance between the Coso Hot Springs and the Deep Rose Geothermal Exploratory Project and Haiwee Geothermal Leasing Area, the likely discontinuity between geothermal resources between the two areas, and the observed isotopic differences in the waters (BLM 2012).

The Ridgecrest Solar Power Project is a dry-cooled facility that would use approximately 150 acre-feet of groundwater per year supplied by the IWVWD. In total, the Project demand is about 1.6 percent of the total demand for IWVWD. In order to keep water use as low as practicable, the Project would recycle process makeup water for a savings of about 25 percent of the annual consumptive use and would consider implementing water conservation offsets to reduce potential impacts of the Project on water resources in the region. Modeling of water use for the IWVWD revealed that the operational use would not increase drawdown over the life of the Project by comparison to a non-Project condition (Solar Millennium 2009). Therefore, no significant impact to regional groundwater from the Ridgecrest Solar Power Project is anticipated.

Potential impacts from agricultural development to existing groundwater wells in the area include; accelerated declines in groundwater levels that impact pumping efficiency costs, the need for deepening existing wells, and/or the drilling of new wells as existing wells become dry, and the threat of increased potential for the intrusion of lower quality groundwater as the gradients are reversed.

Two recent (December 2013) groundwater model simulations completed by the DoN predict groundwater levels (through 2057) using 2012 water production numbers including 13,500 acre-feet of new agricultural water consumption. The model simulations predict water levels decreasing by over 4 feet per year in the areas adjacent to the agricultural water production, which would impact many domestic wells in the area. The model results also show coalescing cones of depression and groundwater gradient changes within the next 15 years. The nearest DoN groundwater production wells are located approximately 2 miles (3.2 kilometers) southeast from the nearest new agricultural water well and the simulations exhibit increased water level declines of an additional 1 to 2 feet per year. The recent active agricultural development includes almost 3,000 acres (1,214 hectares) of land planted with mostly pistachios and limited alfalfa. The recently developed land includes scattered plots bounded by Highway 395 to the south, the Inyo County line to the north, Highway 14/395 along the west, and adjacent to Brown Road along the eastern perimeter. All the recently developed land is located within Kern County.

The Kern County Planning Department finished their Water Availability and Conservation Report in January, 2014 (Todd Engineers 2014). The report compiled information from existing publications and formulated hydrogeologic concepts as well as future planning options for the IWV. NAWSCL has reviewed the report and concurs with the hydrogeologic conceptual model of the Valley as being a “closed” basin and that the groundwater basin has experienced a groundwater deficit (discharge exceeds recharge) since 1959. NAWSCL also concurs with the need for immediate urgency well ordinances and that land use be commensurate with the water resources required to support its development until such time that a supplemental water source can be found with terms agreeable to all stakeholders in the Valley. NAWSCL is working with the other Stakeholders to implement a plan for maximizing/enhancing the regional aquifer within the IWV and exploring options for securing a supplemental water supply.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative impacts to water resources as it relates to other military land withdrawal actions in the region.

Hydrogeologic impacts from the recent agricultural developments are expected to have immediate effects to water levels (water levels decreasing 100 to 200 feet by 2057) and possibly water quality degradation in the immediate areas near the agricultural production wells. Installation wells are expected to experience slightly accelerated water level declines and possibly water quality degradation as time progresses. Per DoN groundwater model predictions, groundwater gradient changes near the Installation groundwater wells would begin to occur around 2025. Also, desaturation of the upper part of the aquifer is expected to continue at a moderate pace, reaching about 20 percent of the aerial extent of the unit by 2057.

The DoN is working with the Kern County and local Stakeholders to develop and implement a plan for maximizing/enhancing the regional aquifer within the IWV and exploring options for securing a supplemental water supply. The potential impacts discussed above for the Proposed Action are not expected to contribute appreciably in significance when considered in combination with impacts from other on- and off-installation actions as the Baseline Alternative/Updated No Action Alternative is not anticipated to increase water use at NAWSCL. However, the Deep Rose Geothermal Exploratory Project, the Haiwee Geothermal Leasing Area, and agricultural development are likely to result in significant impacts on groundwater resources in Rose Valley and IWV from long-term groundwater extraction.

4.7.3.2 Mitigation Measures and Impact Avoidance and Minimization Measures

Mitigation Measures

No mitigation measures are proposed.

Impact Avoidance and Minimization Measures

Since FY 2007 NAWSCL has actively engaged in water conservation practices that yielded a reduction of over 49 percent of the FY 2007 water consumption baseline. As impact mitigation avoidance measures for groundwater resources, NAWSCL continues proactive water conservation practices of replacing turf and other high water-use vegetation with xeriscaped landscapes, repairing leaking pipes, re-lining water storage reservoirs, reducing distribution line flushing from hydrants and valves during drought, and installation of dual flush toilets and low-flow shower heads/faucets. Further, NAWSCL would also continue to:

- Limit and monitor additional large-scale pumping in areas designated in the IWV Cooperative Groundwater Management Plan;
- Distribute new groundwater production in a manner that minimizes adverse effects on existing use patterns;
- Advocate the use of treated water, reclaimed water, and recycled, gray, and lower-quality waters for appropriate applications;
- Explore the utility of other groundwater management methods, such as water transfer, banking, imports, and replenishment. Continue cooperative groundwater data-acquisition and coordination efforts; and
- Explore potential for improvements to cooperative management framework.

Impacts Summary

Military activities would continue at current levels and would not result in any increase in water use and would not result in any significant impacts on surface water or groundwater supply or quality.

Nonmilitary uses would continue to have a negligible effect on water quality and hydrology. Therefore, potential impacts on water quality and hydrology as a result of these activities would not be significant. No changes to geothermal operations are proposed under the Baseline Alternative/Updated No Action Alternative, and no changes would be anticipated with respect to the nature and overall scope of current operations apart from routine and recurring activities (e.g., potential shutting down of existing wells or opening of new wells within approximately the current production area). With no proposed operational changes and the ongoing monitoring, there would be no significant impact on the geothermal characteristics and quality of the area.

Implementation of the CLUMP would have a positive effect by protecting and conserving water resources and by implementing improved planning and decision support processes at NAWSCL. Therefore, implementation of the CLUMP would represent a beneficial impact to water resources.

Given that the Baseline Alternative/Updated No Action Alternative would not result in any changes in water resources, this alternative would not result in cumulatively significant impacts to water quality and hydrology in combination with other potentially cumulative projects. However, the Deep Rose Geothermal Exploratory Project, the Haiwee Geothermal Leasing Area, and agricultural development are likely to result in significant impacts on groundwater resources in Rose Valley and IWV from long-term groundwater extraction.

Since the land withdrawal is a renewal of a previously approved land withdrawal, it would not have any direct or indirect impact on water resources at NAWSCL (Table 4.7-2).

4.7.4 No Action Alternative (Alternative 3)

Because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of “no action” conditions at NAWSCL; therefore, the discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed (please see discussion in Section 2.3.3). For the purposes of the Final EIS/LEIS, the Baseline Alternative/Updated No Action Alternative is considered to effectively represent “no action” conditions or status quo (see Section 4.7.3).

Table 4.7-2
Baseline Alternative/Updated No Action Alternative (Alternative 2) – Summary of Water Quality and Hydrology Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
Significant impacts.	No mitigation measures. NAWSCL would continue proactive water conservation practices of replacing turf and other high water-use vegetation with xeriscaped landscapes, repairing leaking pipes, re-lining water storage reservoirs, reducing distribution line flushing from hydrants and valves during drought and installation of dual flush toilets and low-flow shower heads/faucets. Further, NAWSCL would also continue to: • Limit and monitor additional large-scale pumping in areas designated in the IWV Cooperative Groundwater Management Plan; • Distribute new groundwater production in a manner that minimizes adverse effects on existing use patterns; • Advocate the use of treated water, reclaimed water, and recycled, gray, and lower-quality waters for appropriate applications; • Explore the utility of other groundwater management methods, such as water transfer, banking, imports, and replenishment. Continue cooperative groundwater data-acquisition and coordination efforts; and • Explore potential for improvements to cooperative management framework.
Overall Summary	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.

This page intentionally left blank.

4.8 SOCIOECONOMICS

This section describes potential socioeconomics impacts that may result from implementation of the Proposed Action and alternatives. The analysis evaluates those activities that have the potential to affect socioeconomic indicators, such as population, employment, income, housing, and schools. Environmental justice, which concerns potential impacts to minority, low-income, and child populations, is addressed at the end of this resource section.

4.8.1 Approach to Analysis

In evaluating potential impacts to socioeconomic conditions in the region, the DoN considered whether each alternative would impact employment or unemployment levels, change housing demand, or affect school capacities. For military activities, the socioeconomic analysis combined the analysis of range flight events, airfield flight events, and range ground activities to focus on the overall mission increase associated with each alternative. Other than small, localized output as a result of GTT, it is assumed that GTT would not affect socioeconomic indicators, since, on the whole, ground troops remain within NAWSCL boundaries during training, are self-sufficient, and return to their points of origin immediately following training.

4.8.2 Proposed Action (Alternative 1)

The Proposed Action includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013); revision and implementation of the CLUMP; and accommodation of an increase in RDAT&E and training activities of up to 25 percent, expansion of unmanned aerial and surface systems, and expansion of existing and introduction of evolving DE weapons development. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised and implemented to manage land use and environmental resources.

4.8.2.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. As a legislative action, the public land withdrawal renewal, in itself, would not have any direct or indirect impacts on socioeconomics at NAWSCL or in the region and would effectively maintain a status quo. The analysis for potential impacts to socioeconomics is presented in the subsections below.

Military Uses

Proposed changes to military activities under the Proposed Action include increases in the type and tempo of ongoing military RDAT&E, training, and support activities. The specific activities associated with the Proposed Action are presented in Table 2-2 of this EIS/LEIS.

Because personnel levels would remain relatively stable, there would be only minimal impact on socioeconomic factors linked to Installation activity, including the employment rate or demand for housing and schools. Despite the maintenance of a steady level of permanent personnel in this alternative, a small increase in transient personnel who visit NAWSCL for training and testing purposes could occur, although the economic impact on the ROI from the increased number of visitors would be negligible. A minor beneficial impact on the local economy could occur under this scenario due to a slight increase in local expenditures on goods and services in the ROI that result from somewhat increased DoD business being conducted at NAWSCL.

Nonmilitary Uses

Nonmilitary uses would not change from current conditions under the Proposed Action. These activities include Native American, geothermal, research and education, and recreational activities. The nonmilitary uses in these categories would continue to be considered on a case-by-case basis.

Public access would continue to be limited to specified areas and reviewed on a case-by-case basis to ensure compliance with established safety and security requirements. Limited public access to designated areas would continue to be permitted according to the terms and conditions granted by the NAWSCL Commanding Officer. The DoN would continue to permit nonmilitary uses to the extent that these activities are compatible with military activities; would not create a safety, security, fiscal, or regulatory risk; and would not adversely impact natural and cultural resources at NAWSCL. Because uses under this scenario would be consistent with historic uses, no change in uses or resulting impacts on socioeconomic factors would occur.

CLUMP Implementation

The CLUMP formalizes and streamlines land management practices; ensures mission readiness by facilitating ongoing and evolving test and training activities; protects public health and safety; protects cultural resources; and, through implementation of the management guidelines of the INRMP, ICRMP, and other plans, conserves and protects natural and cultural resources. Under this alternative, the CLUMP would be revised to reflect any changes in land use that would be needed to accommodate military activities. Since the CLUMP would continue to be used to advance the same goals as in the past, outcomes would be consistent, and implementation of the CLUMP would have no impact on socioeconomic factors in the ROI.

Cumulative Impacts

The activities that would occur under the Proposed Action are unlikely to lead to significant impacts to regional socioeconomic conditions. Provisions of the City of Ridgecrest General Plan would support low intensity and open space land uses near NAWSCL to help support compatibility with the NAWSCL mission, thus significant increases in employment in areas near NAWSCL are not anticipated. The continued operation of the Coso geothermal plant, the Deep Rose Geothermal Exploratory Project, Haiwee Geothermal Leasing Area, the Digital 395 Project, and the proposed zeolite mine are existing or new activities that involve minimal staffing to support operations and would not generate substantial new employment or income in the NAWSCL area, and, therefore, would not increase population or increase demand for schools or housing. Additionally, the proposed zeolite mine is over 40 miles from the NAWSCL South Range (150 road miles from the City of Ridgecrest) making any economic contribution to the area less likely. Consequently, these projects would not result in appreciable socioeconomic effects in the NAWSCL area.

Construction and operation employment associated with the Ridgecrest Solar Power Project would provide income to Kern County and other nearby areas, as would local expenditures for materials and services. The Project construction workforce is expected to average 405 workers over a 28-month period, while the long-term operations work force would be 84 full-time employees. Construction would generate approximately $59 million annually in economic benefit and operations would generate approximately $9.7 million annually. Most non-local construction workers are expected to commute rather than relocate to the Project area for an extended period of time. The Project's modest operation work force would not lead to significant population growth or other effects that could adversely affect local socioeconomic conditions in the region (Solar Millennium 2009).

There would likely be temporary increases in employment during construction activities associated with on-installation construction projects (e.g., solar energy field and new school construction), and establishment of new on-installation training areas (e.g., expanded EOD training area). These projects

are relatively small with a limited operational work force that would not likely be large enough to affect the local population or the demand for housing and schools. Therefore, implementation of the Proposed Action in combination with other projects identified in the region would not have significant cumulative impacts to socioeconomics.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative socioeconomic impacts as it relates to other military land withdrawal actions in the region.

4.8.2.2 Mitigation Measures and Impact Avoidance and Minimization Measures

No mitigation measures or impact avoidance and minimization measures are proposed.

Impact Summary

The Proposed Action would result in a small increase in transient personnel who would visit NAWSCL for training and testing purposes, although the economic impact on the ROI from the increased number of visitors would be negligible. A minor beneficial impact on the local economy could occur under this scenario due to a slight increase in local expenditures on goods and services in the ROI that result from somewhat increased DoD business being conducted at NAWSCL.

The DoN would continue to allow nonmilitary uses to the extent that these activities are compatible with military activities; would not create a safety, security, fiscal, or regulatory risk; and would not adversely impact natural and cultural resources at NAWSCL. Because uses under this scenario would be consistent with historic uses, no change in uses or resulting impacts on socioeconomic factors would occur. The CLUMP would continue to be used for strategic planning and implementation of the CLUMP would have no impact on socioeconomic factors in the ROI.

The cumulative projects could result in minor increases in employment and income but these increases would not likely be large enough to affect the local population or the demand for housing and schools. Combined with the Proposed Action, no significant cumulative impacts to socioeconomics are anticipated.

With a slight increase in economic activity from proposed mission activities, the overall, potential impacts to socioeconomics from implementation of the Proposed Action would be beneficial (Table 4.8-1).

4.8.3 Baseline Alternative/Updated No Action Alternative (Alternative 2)

The Baseline Alternative/Updated No Action Alternative includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013) with continuation of military activities at current levels. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised, as appropriate, and implemented to manage land use and environmental resources at NAWSCL.

4.8.3.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. As a legislative action, the public land withdrawal renewal, in itself, would not have any direct or indirect impacts on socioeconomics at NAWSCL or in the region. The analysis for potential impacts to socioeconomics is presented in the subsections below.

Table 4.8-1
Proposed Action (Alternative 1) – Summary of Socioeconomics Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses	
Beneficial impacts.	No mitigation measures. No impact avoidance and minimization measures.
Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Environmental Justice and Protection of Children	
No disproportionately high and adverse effects to minority, low-income, or child populations.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Overall Summary	
Beneficial impacts.	No mitigation measures. No impact avoidance and minimization measures.

Military Uses

Military activities under the Baseline Alternative/Updated No Action Alternative would continue under current conditions. No increase in the type or tempo of ongoing military RDAT&E, training, or support activities would occur. The specific activities associated with the Baseline Alternative/Updated No Action Alternative are presented in Table 2-2 of this EIS/LEIS.

Under the Baseline Alternative/Updated No Action Alternative, no changes in personnel are anticipated. Because personnel levels would remain stable under this alternative, no change in population would occur either directly as a result of more or fewer persons on-installation, or indirectly as a result of more or fewer persons otherwise attached to NAWSCL as family, contractors, or other service providers. As a result, changes in employment and demand for housing and schooling services are not expected and no significant socioeconomic impacts would occur.

Nonmilitary Uses

Under the Baseline Alternative/Updated No Action Alternative, current nonmilitary uses and patterns of use would continue. These activities include Native American, geothermal, research and education, and recreational activities. The proposed nonmilitary uses in these categories would continue to be

considered on a case-by-case basis. Some types of nonmilitary uses, such as those that attract visitors to NAWSCL, can contribute to the local economy. Visitors can support the service and retail trade industries in the area, although the economic contribution of visitors is minor due to limited access to NAWSCL, especially in comparison to other easily accessible recreational sites in the region, such as Death Valley National Park. Under the Baseline Alternative/Updated No Action Alternative, the economic contribution of nonmilitary activities would continue at current levels, and no significant socioeconomic impacts would occur, since uses would be consistent with historic uses.

CLUMP Implementation

The CLUMP provides an integrated framework for the management of military activities, public health and safety practices, and environmental resource conservation programs at NAWSCL. Under this alternative, the CLUMP would be revised to reflect any changes in land use that would be needed to accommodate current military activities. Since the CLUMP would continue to be used to advance the same goals as in the past, outcomes would be consistent over time. Therefore, implementation of the CLUMP would have no impact on socioeconomic factors in the ROI.

Cumulative Impacts

Cumulative impacts anticipated under the Baseline Alternative/Updated No Action Alternative would be similar to the likely cumulative impacts associated with the Proposed Action, only to a somewhat lesser extent or intensity, insofar as NAWSCL's cumulative impacts would be expected to be somewhat lower under the Baseline Alternative/Updated No Action Alternative because this alternative would not include the potential increase in RDAT&E and training activities.

The continued operation of the Coso geothermal plant, the Deep Rose Geothermal Exploratory Project, Haiwee Geothermal Leasing Area, the Digital 395 Project, and the proposed zeolite mine are existing or new activities that involve minimal staffing to support operations and would not generate substantial new employment or income in the NAWSCL area, and, therefore, would not increase population or increase demand for schools or housing.

Construction and operation employment associated with the Ridgecrest Solar Power Project would provide income to Kern County and other nearby areas, as would local expenditures for materials and services. The Project construction workforce is expected to average 405 workers over a 28-month period, while the long-term operations work force would be 84 full-time employees. Construction would generate approximately $59 million annually in economic benefit and operations would generate approximately $9.7 million annually. Most non-local construction workers are expected to commute rather than relocate to the Project area for an extended period of time. The Project's modest operation work force would not lead to significant population growth or other effects that could adversely affect local socioeconomic conditions in the region (Solar Millennium 2009).

There would likely be temporary increases in employment during construction activities associated with on-installation construction projects (e.g., solar energy field and new school construction), and establishment of new on Installation training areas (e.g., expanded EOD training area). The increase in income and employment from other projects in the region and the installation-related employment and population conditions associated with the Baseline Alternative/Updated No Action Alternative (i.e., continuation of current conditions) is not likely to be large enough to affect the local population or the demand for housing and schools. Therefore, implementation of the Baseline Alternative/Updated No Action Alternative in combination with other projects identified in the region would not have significant cumulative impacts to socioeconomics.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3)

involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative socioeconomic impacts as it relates to other military land withdrawal actions in the region.

4.8.3.2 Mitigation Measures and Impact Avoidance and Minimization Measures

No mitigation measures or impact avoidance and minimization measures are proposed.

Impact Summary

Since the land withdrawal is a renewal of a previously approved land withdrawal, it would not have any direct or indirect impact on socioeconomics at NAWSCL or in the region. Because personnel levels would remain stable under this alternative, no change in population would occur. As a result, changes in employment and demand for housing and schooling services are not expected and no significant socioeconomic impacts would occur.

The economic contribution of nonmilitary activities would continue at current levels, and no significant socioeconomic impacts would occur. The CLUMP would continue to be used for strategic planning and implementation of the CLUMP would have no impact on socioeconomic factors in the ROI.

The cumulative projects could result in minor increases in employment and income but these increases would not likely be large enough to affect the local population or the demand for housing and schools. Combined with the Baseline Alternative/Updated No Action Alternative, no significant cumulative impacts to socioeconomics are anticipated.

Because no change in economic activity is anticipate, the overall, potential impacts to socioeconomics from implementation of the Baseline Alternative/Updated No Action Alternative would not be significant (Table 4.8-2).

4.8.4 No Action Alternative (Alternative 3)

Because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of “no action” conditions at NAWSCL; therefore, the discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed (please see discussion in Section 2.3.3). For the purposes of the Final EIS/LEIS, the Baseline Alternative/Updated No Action Alternative is considered to effectively represent “no action” conditions or status quo (see Section 4.8.3).

4.8.5 Environmental Justice

EO 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, was issued on 11 February 1994. This EO requires that each federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low- income populations (EO 12898, 59 Federal Register 7629 [Section 1-101]). On 21 April 1995, the Secretary of Defense submitted a formal environmental justice strategy to USEPA. To comply with the EO, the following actions occurred concurrently with preparation of this EIS/LEIS:

- Economic, racial, and demographic information was gathered to identify areas of low-income and minority populations in the areas potentially exposed to project effects (see Section 3.8.2.2);
- The activities proposed at NAWSCL were assessed for disproportionate off-installation impacts resulting from NAWSCL activities associated with each of the alternatives; and

Table 4.8-2
Baseline Alternative/Updated No Action Alternative (Alternative 2) – Summary of Socioeconomics Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Environmental Justice and Protection of Children	
No disproportionately high and adverse effects to minority, low-income, or child populations.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Overall Summary	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.

- Community participation and input from all groups were encouraged through public meetings and extensive public notification.

EO 13045, Protection of Children from Environmental Health Risks and Safety Risks, was issued on 23 April 1997. This EO requires that each federal agency evaluate whether proposed projects and/or regulations may disproportionately affect the health and safety of children (EO 13045, 62 Federal Register 19883).

For the majority of resources analyzed in this document, potential impacts resulting from implementing the alternatives either would not affect off-installation populations or would not result in significant impacts. However, it was determined that noise impacts would remain significant and unavoidable under the Proposed Action. Socioeconomic and utilities/public service impacts would occur under the No Action Alternative, and would remain significant and unavoidable.

To determine whether disproportionately high and adverse human health or environmental effects on minority or low-income populations would result from implementation of any of the alternatives, U.S. Census data were evaluated. Data from each Census block group that underlies an impact footprint were reviewed to determine if these block groups contain minority or low-income residents. The percentage of minority and low-income residents in each Census block group was then compared to the corresponding percentage of minority or low-income residents in Kern County, or 50 percent, whichever was less.

To determine whether disproportionate health and safety impacts may occur to children, Census data and land use data were evaluated. Data from each Census block group that underlies an impact footprint were reviewed to determine if these block groups contain a disproportionate share of children. The percentage of children in each Census block group was then compared to the corresponding percentage of minority or low-income residents in Kern County. Additionally, the locations of child-oriented facilities were reviewed to determine if any were within impact footprints and if children may be disproportionately exposed to health and safety risks. As discussed below, the assessment indicates that implementation of any of the alternatives would not result in environmental health risks and safety risks that may disproportionately affect children.

The information on areas of low-income and minority populations described in Section 3.8 of this EIS/LEIS was then used to assess the potential for disproportionate off-installation impacts resulting from implementation of each of the alternatives. Figure 4.8-1 presents the noise contours under the Proposed Action and Baseline Alternative/Updated No Action Alternative in relation to the adjacent census tracts and block groups. As discussed below, the assessment indicates that implementation of any of the alternatives would not result in disproportionately high and adverse human health or environmental effects on minority nor low-income populations.

4.8.5.1 Proposed Action

Under the Proposed Action, most identified adverse environmental impacts would be mitigable to less-than-significant levels with implementation of procedures described in this document.

However, noise contours contributed by departure operations would be slightly greater under the Proposed Action compared to baseline conditions. This noise increase is primarily due to the introduction of the F-35C, which generates louder noise during takeoff, and the up to 25 percent increase in overall aircraft events. A small portion of seven block groups outside the boundaries of NAWSCL would be contained within the estimated 70-dB contour, while a small portion of 17 block groups outside the boundaries of NAWSCL would be contained within the estimated 65-dB contour. Of the schools and children-oriented facilities noted in Section 3.8, only Richmond Elementary School and Immanuel Christian School are within either the 65- or 70-dB contour.

While some of the block groups do exhibit percentages of minority, low-income, and child populations greater than Kern County or 50 percent (whichever is less), the distribution of block groups affected includes large areas where the overall percentages of low-income and minority populations in these census block groups are lower than the corresponding percentages for Kern County (or are less than 50 percent). Additionally, the vast majority of schools and children-oriented recreational facilities in the area are not significantly affected. Therefore, noise impacts associated with proposed flight operations do not have disproportionately high and adverse human health or environmental effects on minority, low-income, or child populations.

4.8.5.2 Baseline Alternative/Updated No Action Alternative

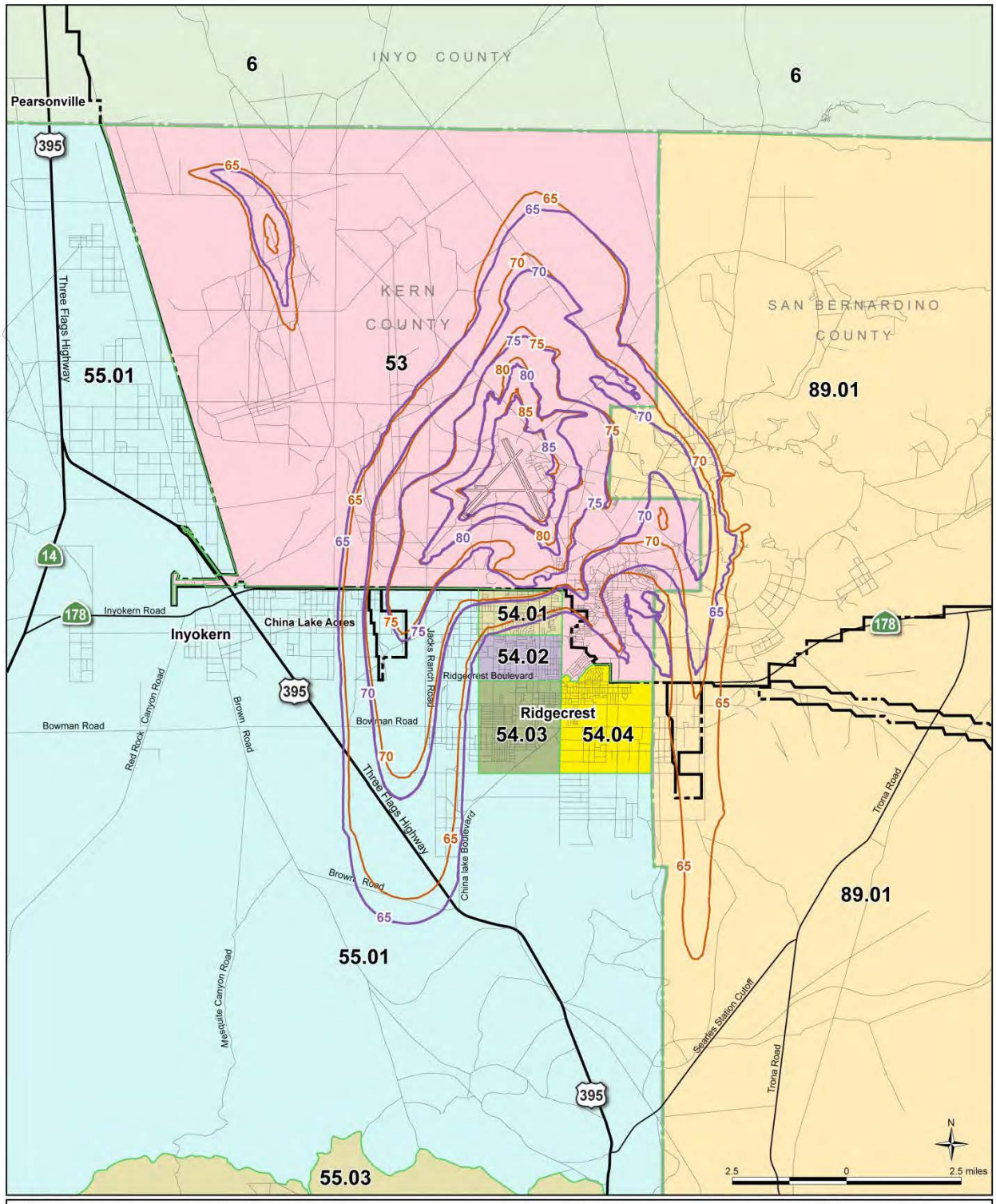
Under the Baseline Alternative/Updated No Action Alternative, most identified adverse environmental impacts would be mitigable to less-than-significant levels with implementation of procedures described in this document. However, existing aircraft noise resulting from ongoing flight events is significant and exceeds noise compatibility thresholds. A small portion of three block groups outside the boundaries of NAWSCL are be contained within the estimated 70-dB contour, while a small portion of 8 block groups outside the boundaries of NAWSCL are contained within the estimated 65-dB contour. No schools or children-oriented facilities noted in Section 3.8 are within either the 65- or 70-dB contour.

While some of these block groups do exhibit percentages of minority, low-income, and child populations greater than Kern County or 50 percent (whichever is less), the distribution of block groups affected

includes large areas where the overall percentages of low-income and minority populations in these census block groups are lower than the corresponding percentages for Kern County (or are less than 50 percent). Therefore, noise impacts associated with proposed flight operations do not have disproportionately high and adverse human health or environmental effects on minority, low-income, or child populations.

4.8.5.3 No Action Alternative

Because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of "no action" conditions at NAWSCL; therefore, the discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed (please see discussion in Section 2.3.3). For the purposes of the Final EIS/LEIS, the Baseline Alternative/Updated No Action Alternative is considered to effectively represent "no action" conditions or status quo (see Section 4.8.3).



CHINALAKEEIS/094a

LEGEND

55.01 Census Tract
Installation Boundary
Road
County Boundary

CNEL Contour (dBA)

Proposed Action
Baseline Alternative/ Updated No Action Alternative

Census Tracts and Noise Contours for the Proposed Action and Baseline Alternative/ Updated No Action Alternative

Figure 4.8-1

4.9 UTILITIES AND PUBLIC SERVICES

This section identifies potential impacts to utilities and public services that may result from implementation of the Proposed Action and alternatives. The impact analysis compares projected conditions after implementation of each alternative to the affected environment and focuses on those activities that have the potential to adversely affect utilities and public services.

4.9.1 Approach to Analysis

Impacts associated with utilities and public services generally are related to changes in the supply or demand of a particular resource. The supply of a utility or public service also is referred to as its capacity. As long as the capacity of a particular utility or service is higher than the demand for that resource, no impact occurs. However, if the demand exceeds the capacity, or if the demand is increased beyond the resource's projected rate of increase, an impact would occur; the significance of the impact is determined based on the degree to which the capacity is strained.

The total number of permanent personnel at NAWSCL is the primary factor in determining the demand for each utility and public service. Therefore, proposed changes in the number of permanent personnel is the primary factor used when evaluating potential impacts associated with each of the alternatives. Secondary factors used when evaluating the potential impacts to utility and public services include new facilities, types of equipment, and testing activities. None of the alternatives involve these secondary factors and, thus, would not impact demand for utilities and public services. An additional factor that can affect a utility or public service is a change in the supply of a particular resource or in the capacity of the utility infrastructure.

When evaluating impacts on a utility or service, consideration is given to whether implementing one of the alternatives would result in a violation of federal standards or requirements that regulate a public utility system; result in an increase in demand that exceeds the utility system's or public service's capacity and necessitates a substantial expansion, additional facilities, or increased staffing levels; or result in an extreme decrease in demand that would strand resources and ultimately result in public services/utilities that could not be supported by the remaining population, necessitating an extreme contraction of services, the closure of facilities, and the reduction of staff.

The analysis of potential impacts on utilities and public services combines the effects of range flight events, airfield flight events, and range ground activities, and focuses on the overall mission increase (or decrease) associated with each alternative. It is assumed that GTT would not affect utilities and public services, since ground troop activities take place in remote areas of the Installation and the troops remain self-sufficient throughout their exercises.

4.9.2 Proposed Action (Alternative 1)

The Proposed Action includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013); revision and implementation of the CLUMP; and accommodation of an increase in RDAT&E and training activities of up to 25 percent, expansion of unmanned aerial and surface systems, and expansion of existing and introduction of evolving DE weapons development. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised and implemented to manage land use and environmental resources.

4.9.2.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. As a legislative action, the public land withdrawal renewal, in itself, would not have any direct or indirect impacts on utilities and public services at NAWSCL or in the region. The analysis for potential impacts to utilities and public services is presented in the subsections below.

Military Uses

Under the Proposed Action, increases in range flight events, airfield flight events, and range ground activities are proposed. Details regarding proposed military uses under this alternative are outlined in Table 2-2 of this EIS/LEIS.

The proposed increases in military uses at NAWSCL would not result in an increase in permanent personnel or other activities that would significantly affect the supply or demand of utilities and public services on the Installation. Overall demand placed on utilities (water, wastewater treatment, electrical service, natural gas, propane, and steam distribution) and public services (health services, police services, fire protection services, and recreation) would not exceed existing capacities. These systems would continue to meet existing federal regulation requirements. Therefore, no significant impacts on utilities and public services would occur under the Proposed Action.

Nonmilitary Uses

Under the Proposed Action, existing Native American, geothermal, research and education, and recreational activities would continue at NAWSCL. The DoN would continue to permit nonmilitary uses to the extent that these activities are compatible with military activities; do not create a safety, security, fiscal, or regulatory risk; and do not adversely impact natural and cultural resources at NAWSCL. Nonmilitary uses would not place additional demand on utilities or public services; therefore, continued nonmilitary uses would have no significant impacts on utilities and public services.

CLUMP Implementation

Implementation of the CLUMP would serve to facilitate improved planning and decision-making with regard to utilities and public services and, thus, represents a beneficial impact.

Cumulative Impacts

Implementation of the Proposed Action could result in minor increases in utility requirements as a result of increased activities at NAWSCL. Other than the Ridgecrest Solar Energy Project and the Solar Energy Project occurring at NAWSCL, none of the projects would substantially change the supply or demand or otherwise affect the utilities or services on NAWSCL or within the region. Although not a traditional utility system, the Digital 395 Project is being implemented to increase the availability of broadband access in the region to help integrate existing community institutions such as hospitals, schools, and libraries. Installation of underground fiber-optic cables would also occur on NAWSCL (connecting to Michelson Lab and on-installation schools) to connect to the Digital 395 system. The Ridgecrest Solar Energy Project will have a nominal output of 250 megawatts. The Solar Energy Project occurring at NAWSCL is expected to supply 30 percent of the Installations energy needs through a power purchase agreement. The power purchase agreement allows the DoN to buy electricity at a discount from retail utility rates and reduce its costs by an estimated $13 million over the next 20 years. The other projects in the region, by themselves, would not have any impact on utility resources; however, if the construction activities associated with the cumulative projects were to occur simultaneously, there could be a temporary increase in demand for utilities and public services caused by temporary construction personnel in the area. This increase in

demand could have a minor but negligible impact on these resources. Therefore, no impacts are anticipated.

Provisions of the City of Ridgecrest General Plan would support low intensity and open space land uses near NAWSCL to help support compatibility with the NAWSCL mission, thus significant increases in utilities and public services in the region are not anticipated. Based on the scope and location of the Deep Rose Geothermal Exploratory Project, Haiwee Geothermal Area, Digital 395 Project, and the proposed zeolite mine, these projects are not expected to have an appreciable impact on utilities and public services, because their implementation would not require a significant increase in demand for utilities and public services. Minimal long-term utility requirements may be required for some of the projects; however, regional capacity is more than adequate to serve the needs. Therefore, implementation of the Proposed Action in combination with other projects identified in the region would not have significant cumulative impacts to utilities and public services.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative impacts to utilities and public services as it relates to other military land withdrawal actions in the region.

4.9.2.2 Mitigation Measures and Impact Avoidance and Minimization Measures

No mitigation measures or impact avoidance and minimization measures are proposed.

Impact Summary

Since the land withdrawal is a renewal of a previously approved land withdrawal, it would not have any direct or indirect impact on utilities and public services at NAWSCL or in the region. The proposed increases in military uses at NAWSCL would not result in an increase in permanent personnel or other activities that would significantly affect the supply or demand of utilities and public services on the Installation. Overall demand placed on utilities and public services would not exceed existing capacities. Therefore, no significant impacts on utilities and public services are anticipated under the Proposed Action.

Nonmilitary uses would not place additional demand on utilities or public services and would have no-significant impacts on utilities and public services. The CLUMP would serve to facilitate improved planning and decision-making with regard to utilities and public services and, thus, represents a beneficial impact.

The other projects in the region, in addition to the Proposed Action, would not have a significant cumulative impact on utilities and public services. If construction activities associated with the cumulative projects were to occur simultaneously, there could be a temporary increase in demand for utilities and public services caused by temporary construction personnel in the area. This negligible increase in demand would not result in significant cumulative impacts to utilities and public services.

Because no significant change in population is anticipated, the overall, potential impacts to utilities and public services from implementation of the Proposed Action would not be significant (Table 4.9-1).

Table 4.9-1
Proposed Action (Alternative 1) – Summary of Utilities and Public Services Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Overall Summary	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.

4.9.3 Baseline Alternative/Updated No Action Alternative (Alternative 2)

The Baseline Alternative/Updated No Action Alternative includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013) with continuation of military activities at current levels. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised, as appropriate, and implemented to manage land use and environmental resources at NAWSCL.

4.9.3.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. As a legislative action, the public land withdrawal renewal, in itself, would not have any direct or indirect impacts on utilities and public services at NAWSCL or in the region. The analysis for potential impacts to utilities and public services is presented in the subsections below.

Military Uses

Under the Baseline Alternative/Updated No Action Alternative, established RDAT&E and training activities and associated military land uses would continue at existing levels and within areas currently designated

for such activities. Additional information regarding existing levels of military use is outlined in Table 2-2 of this EIS/LEIS.

Ground-based activities occurring at NAWSCL include actions that support RDAT&E and training events, GTT activities, and facilities operations and maintenance activities. Since no additional personnel would move to the ROI as a result of this alternative, the demand placed on utilities (water, wastewater treatment, electrical service, natural gas, propane, and steam distribution) and public services (health services, police services, fire protection services, and recreation) would not change, and capacities would continue to be able to meet current demand. These systems would continue to meet existing federal regulation requirements. Therefore, no significant impacts on utilities and public services under the Baseline Alternative/Updated No Action Alternative are anticipated.

Nonmilitary Uses

Under the Baseline Alternative/Updated No Action Alternative, existing Native American, geothermal, research and education, and recreational activities would continue at NAWSCL. The DoN would continue to permit nonmilitary uses to the extent that these activities are compatible with military activities; do not create a safety, security, fiscal, or regulatory risk; and do not adversely impact natural or cultural resources at NAWSCL. Continued nonmilitary uses would not place additional demand on utilities or public services; therefore, continued nonmilitary uses would have no significant impacts on utilities and public services.

CLUMP Implementation

Implementation of the CLUMP would serve to facilitate improved planning and decision-making with regard to utilities and public services and, thus, would represent a beneficial impact.

Cumulative Impacts

Cumulative impacts anticipated under the Baseline Alternative/Updated No Action Alternative would be similar to the likely cumulative impacts associated with the Proposed Action, only to a somewhat lesser extent or intensity, insofar as NAWSCL's cumulative impacts would be expected to be somewhat lower under the Baseline Alternative/Updated No Action Alternative because this alternative would not include the potential increase in RDAT&E and training activities.

Other than the Ridgecrest Solar Energy Project and the Solar Energy Project occurring at NAWSCL, none of the projects would substantially change the supply or demand or otherwise affect the utilities or services on NAWSCL or within the region. The Ridgecrest Solar Energy Project will have a nominal output of 250 megawatts. The Solar Energy Project occurring at NAWSCL is expected to supply 30 percent of the Installations energy needs through a power purchase agreement, which allows the DoN to buy electricity at a discount from retail utility rates and reduce its costs by an estimated $13 million over the next 20 years.

Provisions of the City of Ridgecrest General Plan would support low intensity and open space land uses near NAWSCL to help support compatibility with the NAWSCL mission, thus significant increases in utilities and public services in the region are not anticipated. Based on the scope and location of the Deep Rose Geothermal Exploratory Project, Haiwee Geothermal Area, Digital 395 Project, and the proposed zeolite mine, these projects are not expected to have an appreciable impact on utilities and public services, because their implementation would not require a significant increase in demand for utilities and public services. Minimal long-term utility requirements may be required for some of the projects; however, regional capacity is more than adequate to serve the needs. The Baseline Alternative/Updated No Action Alternative would not have the potential to appreciably alter the demand or capacity with respect to utilities and public services in the region. Therefore, implementation of the Baseline Alternative/Updated

No Action Alternative in combination with other projects identified in the region would not have significant cumulative impacts to utilities and public services.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative impacts to utilities and public services as it relates to other military land withdrawal actions in the region.

4.9.3.2 Mitigation Measures and Impact Avoidance and Minimization Measures

No mitigation measures or impact avoidance and minimization measures are proposed.

Impact Summary

Since the land withdrawal is a renewal of a previously approved land withdrawal, it would not have any direct or indirect impacts on utilities or public services at NAWSCL or in the region. Established RDAT&E and training activities and associated military land uses would continue at existing levels and within areas currently designated for such activities. The demand placed on utilities and public services would not change, and capacities would continue to be able to meet current demand. Therefore, no significant impacts on utilities and public services under the Baseline Alternative/Updated No Action Alternative would be anticipated.

Nonmilitary uses would continue at current demand levels and would have no significant impacts on utilities and public services. The CLUMP would serve to facilitate improved planning and decision-making with regard to utilities and public services and, thus, represents a beneficial impact.

The Baseline Alternative/Updated No Action Alternative would not result in any adverse changes to utilities and public services at NAWSCL. Therefore, implementation of the other projects in combination with the Baseline Alternative/Updated No Action Alternative would not have significant cumulative impacts.

Because no change in demand for utilities and public services would be anticipated, the overall, potential impacts to utilities and public services would not be significant (Table 4.9-2).

4.9.4 No Action Alternative (Alternative 3)

Because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of “no action” conditions at NAWSCL; therefore, the discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed (please see discussion in Section 2.3.3). For the purposes of the Final EIS/LEIS, the Baseline Alternative/Updated No Action Alternative is considered to effectively represent “no action” conditions or status quo (see Section 4.9.3).

Table 4.9-2
Baseline Alternative/Updated No Action Alternative (Alternative 2) – Summary of Utilities and Public Services Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Overall Summary	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.

This page intentionally left blank.

4.10 PUBLIC HEALTH AND SAFETY

This section identifies potential impacts to public health and safety that may result from implementation of the Proposed Action and alternatives. The impact analysis compares projected conditions after implementation of each alternative to the affected environment and focuses on those activities that have the potential to adversely affect public health and safety.

4.10.1 Approach to Analysis

Public safety impacts are considered significant if the general public is substantially endangered as a result of DoN activities on the ranges. For each RDAT&E activity or group of similar activities, an estimate of risk to the general public was formulated based on the DoN's current set of safety procedures for range activities. Several factors were considered in evaluating the effects of the DoN's proposed activities on public safety. These factors are proximity to the public, ownership, access control, scheduling, public notification of events, frequency of events, duration of events, range safety procedures, control of testing and training events, nature of testing and training events, and safety history.

4.10.2 Proposed Action (Alternative 1)

The Proposed Action includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013); revision and implementation of the CLUMP; and accommodation of an increase in RDAT&E and training activities of up to 25 percent, expansion of unmanned aerial and surface systems, and expansion of existing and introduction of evolving DE weapons development. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised and implemented to manage land use and environmental resources.

4.10.2.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. As a legislative action, the public land withdrawal renewal, in itself, would not have any direct or indirect impacts on public health and safety at NAWSCL or in the region. The analysis for potential impacts to public health and safety is presented in the subsections below.

Military Uses

This section will discuss range access/safety, target and test area use, aircraft flight events, electromagnetic frequency and laser activities, and range ground activities. Fire hazards are a concern for these types of activities. NAWSCL is in the process of establishing a fire policy. This policy along with its management measures would reduce fire-related impacts. For additional information on fire management, refer to Section 4.4.2.1, Biological Resources.

Range Access/Safety

Access control would continue through the use of existing systems, including badging authorized personnel, perimeter fencing, roadblocks, barricades, locked gates, and guard posts. No significant impacts are anticipated from implementation of the existing range access/safety procedures to prevent unauthorized personnel from accessing the ranges.

Target and Test Area Use

Access control would continue through the use of existing systems, including badging authorized personnel, perimeter fencing, roadblocks, barricades, locked gates, and guard posts. Under the Proposed Action, the Test Management Office, in conjunction with the test sponsor and the RSO, would continue to

conduct test and training activities in accordance with established safety policies and procedures. In addition, the DoN would continue its policy of clearing UXO and removing MPPEH from the ranges after tests are conducted as conditions allow. Use of target or test sites on the ranges would continue to be conducted in a manner that ensures compatibility with existing safety guidelines and procedures, and is consistent with established ESQD regulations. With one exception, ESQD arcs would remain within the NAWSCL boundaries and would not affect public safety. The one ESQD arc that extends off-installation is located on Randsburg Wash Road and extends onto BLM lands. This arc is established for a railroad siding built for the off-loading of munitions deliveries to NAWSCL. The DoN has obtained a perpetual right-of-way authorization from BLM to address the handling of munitions items at this remote site. The areas within and adjacent to the arc consist of undeveloped BLM land; munitions handling at the site is conducted in strict accordance to established safety procedures. The site is used infrequently (approximately six times per year) for munitions delivery. Since the area is used infrequently and in accordance with established safety policies, and is in a remote and undeveloped location, the risk to public safety is considered to be very low. In addition, weapons footprints associated with range ground activities do not extend off DoN-controlled property. Since the use and associated handling of munitions at target and test sites would be conducted according to established safety procedures, potential impacts on public health and safety would not be significant.

Aircraft Flight Events

Under the Proposed Action, the increase in range flight events could incrementally increase the potential for aircraft accidents or mishaps. However, current range and airspace safety procedures would continue to be implemented, and additional range flight events would adhere to established range safety procedures. Civilian and commercial aircraft would continue to be restricted from the airspace over the ranges when they are being used for military activities. Implementation of the existing BASH program would continue to keep pilots advised of bird movements to minimize the potential for bird strikes. The limited amount of time an aircraft is over any specific geographic location, combined with the relatively low population density of the ROI, lowers the probability that an aircraft mishap would occur over a populated area. Range flight events would continue to be conducted in accordance with established procedures, with the safety of pilots and people in the surrounding communities the primary concern.

The strict control of restricted airspace, the restricted access to range areas, and the use of established FTS would minimize the potential for safety risks and ensure the separation of range activities from nonparticipants. These ongoing safety procedures minimize the potential risk of increased range flight events; therefore, no significant impacts from aircraft flight events are anticipated.

Under the Proposed Action, the increase in airfield use for takeoffs, landings, proficiency training, and other flights could increase the safety risk to aircrews and personnel due to the increased accident and mishap potential associated with the higher number of aircraft events. Of the 26 aircraft incidents related to airfield events occurring from 1958 to 2010, only 2 incidents occurred off-installation. Most occurred in areas designated as APZs, which are contained entirely on-installation. Based on historic records, it is expected that any off-installation incidents would occur in proximity (within 1 mile [1.6 kilometers]) to NAWSCL lands on nearby undeveloped public land.

In addition, current airspace safety procedures would continue to be implemented and additional airfield flight events would adhere to established safety procedures. Aircraft activity at Armitage Airfield would continue to be scheduled in accordance with established safety procedures to ensure that flight events do not conflict with one another. The limited amount of time an aircraft is over any specific geographic location, combined with the relatively low population density of the ROI, lowers the probability that an aircraft mishap would occur over a populated area. Airfield flight events would continue to be conducted with the safety of its pilots and people in the surrounding communities as the primary concern. These

ongoing safety procedures minimize the potential risk of increased airfield flight events; therefore, no significant impacts from airfield flight events are anticipated.

Electromagnetic Frequency Events

Personnel working with RF-emitting devices, including HPM systems, would be limited to PELs for controlled environments and would follow approved SOPs. Safety exclusion zones would be established and clearly delineated. As a safety precaution, non-essential personnel would be evacuated from the area prior to initiating tests.

Implementation of the measures and controls provided in Section 3.10.8.1 would ensure that non-involved workers (e.g., personnel working at Mainsite) and members of the public would not be exposed to EMR levels greater than the PELs for uncontrolled environments. Therefore, potential impacts from RF-emitting devices would not be significant.

Laser Events

Activities involving HEL systems would be conducted utilizing the applicable health and safety measures as identified in Section 3.10.10. These laser activities would be managed in accordance with appropriate range safety regulations and approved SOPs. Backdrops, buffer zones, beam path restrictors, and administrative controls would be in place during ground-based laser activities.

The use of engineered and administrative controls would minimize the health and safety risks associated with laser activities associated with this alternative. These controls would minimize the potential for ocular damage or impairment resulting from exposure to laser (optical) radiation, while also minimizing potential skin damage. Also, any non-beam hazards associated with the laser systems would be adequately controlled based on the in-place engineered and administrative controls during lasing activities. Therefore, potential impacts from laser activities would not be significant.

Range Ground Events

Under the Proposed Action, increasing munitions use at target and test sites would continue to be planned and coordinated by test managers and test schedulers to minimize safety risks. The Test Management Office, in conjunction with the test sponsor and RSO, would continue to conduct test and training activities in accordance with established range safety policies and procedures. In addition, NAWSCL would continue its policy of clearing UXO and removing MPPEH from the ranges after tests are conducted as conditions allow. Increased use of munitions at target or test sites on the ranges would continue to be conducted in a manner that ensures compatibility with existing safety procedures and is consistent with established ESQD regulations. In addition, weapons footprints associated with range ground activities do not extend off DoN-controlled property. An up to 25 percent increase in use of munitions at target and test sites would not create significant additional public health and safety risks because these activities would continue to be conducted in established impact areas well away from off-installation areas. Therefore, impacts on public health and safety would not be significant.

GTT activities would increase in approved areas throughout the NAWSCL ranges as described in Section 2.3.1.2, Range Ground Events. Given the nature of GTT activities (i.e., foot and vehicle traffic) and the fact that they are conducted within Installation boundaries and in established areas, GTT activities would not pose a public safety risk. Therefore, potential impacts to public health and safety from increased GTT activities would not be significant.

Nonmilitary Uses

Under the Proposed Action, existing Native American, geothermal, research and education, and recreational activities would continue at NAWSCL. The DoN would continue to permit nonmilitary uses to

the extent that these activities are compatible with military activities; do not create a safety, security, fiscal, or regulatory risk; and do not adversely impact natural and cultural resources at NAWSCL.

Nonmilitary activities do not now and would not under the Proposed Action create significant safety risks to the public. Use of munitions or firearms is not permitted when these types of activities are occurring. Current Native American, research and education, and recreational activities do not expose the public to health or safety hazards; therefore, no significant impacts would are anticipated.

CLUMP Implementation

Implementation of the CLUMP would integrate the Installation's environmental and operational planning and review processes. This review process provides for an analysis of actions that may increase risks associated with flight events, ground activities, munitions use, and EMR use, and would require that appropriate management efforts be applied to those actions to comply with established health and safety requirements. As such, implementation of the CLUMP would represent a beneficial impact.

Cumulative Impacts

The increased activity of the Proposed Action would be conducted in accordance with the established security and safety procedures discussed above; therefore significant impacts to public health and safety from mission activities are not anticipated.

On-installation construction projects (e.g., solar energy field and new school construction) and off-installation construction projects (e.g., Ridgecrest Solar Power Project, Deep Rose Geothermal Exploratory Project, Haiwee Geothermal Leasing Area, Digital 395 Project, and the proposed zeolite mine) could pose risks to persons accessing the construction areas. Safety risks to the public would be minimized by access controls, fencing of construction sites, and implementing standard construction safety procedures. Due to the implementation of the safety procedures and access restrictions, potential impacts associated with public health and safety at the sites would not be significant. Agricultural development in the area could result in an increase in the presence of birds, which could increase the potential BASH hazard for pilots. Proposed agricultural development is over 6 miles from Armitage Airfield and pilots would typically fly at altitudes where birds are less prevalent (birds will most likely remain near the ground surface); therefore potential BASH increases should be minimal.

The accommodation of evolving mission needs (e.g., expanded EOD training area) would likely result in minor changes to health and safety precautionary measures; based on the number of training events, types of activities, and the fact that test and training activities undergo strict safety reviews, potential health and safety concerns from these activities is not anticipated to have appreciable public health and safety effects.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative impacts to public health and safety as it relates to other military land withdrawal actions in the region.

No cumulative public health and safety impacts would be expected due to off-installation projects. Because these projects involve lands located off-installation, often at very considerable distances, they would not conflict with on-installation mission activities or areas of existing hazards, such as concentrated munitions use areas. These projects would not involve or develop activities that expose people to existing or increased safety hazards, and the potential for any potential health and safety risk associated with such projects would be different than the potential risks associated with RDAT&E activities at NAWSCL (with the exception of on-installation construction projects); therefore, activities under the Proposed Action

are not expected to result in significant cumulative effects to public health and safety in combination with other projects in the region.

4.10.2.2 Mitigation Measures and Impact Avoidance and Minimization Measures

No mitigation measures are proposed; however, several impact avoidance and minimization measures would continue to be implemented, including:

- Access control to the installation would continue through the use of existing systems, including badging authorized personnel, perimeter fencing, roadblocks, barricades, locked gates, and guard posts.
- Test and training activities would continue to be conducted in accordance with established safety policies and procedures.
- Current range and airspace safety procedures would continue to be implemented.
- Civilian and commercial aircraft would continue to be restricted from the airspace over the ranges when they are being used for military activities.
- Implementation of the existing BASH program would continue to keep pilots advised of bird movements to minimize the potential for bird strikes.
- RF-emitting devices would be limited to PELs for controlled environments and would follow approved SOPs.
- Safety exclusion zones for RF-emitting equipment would be established and clearly delineated.
- Laser activities would be managed in accordance with appropriate range safety regulations and approved SOPs.
- Backdrops, buffer zones, beam path restrictors, and administrative controls would be in place during ground-based laser activities.
- Non-essential personnel would be evacuated from the area prior to initiating laser tests.
- Continue policy of clearing UXO and removing MPPEH from the ranges after tests are conducted as conditions allow.

Impacts Summary

Implementation of the existing range access/safety procedures to prevent unauthorized personnel from accessing the ranges would result in no significant impacts. Test and training activities would continue to be conducted in accordance with established safety policies and procedures. With one exception, ESQD arcs would remain within the NAWSCL boundaries and would not affect public safety. The one ESQD arc extends onto BLM lands and the DoN has obtained a perpetual right-of-way authorization from BLM to handle munitions items at this remote site. Since the area is used infrequently and in accordance with established safety policies, and is in a remote and undeveloped location, no significant impact to public safety is anticipated.

Range flight events would continue to be conducted in accordance with established procedures, with the safety of pilots and people in the surrounding communities as the primary concern. Implementation of the existing BASH program would minimize the potential for bird strikes. The limited amount of time an aircraft is over any specific geographic location, combined with the relatively low population density of the ROI, lowers the probability that an aircraft mishap would occur over a populated area. These ongoing safety procedures would minimize the potential risk of increased range flight events to a level that would be less than significant. Aircraft activity at Armitage Airfield would continue to be conducted in accordance with established safety procedures with the safety of its pilots and people in the surrounding communities as the primary concern. These ongoing safety procedures would minimize the potential risk of increased airfield flight events to a level that is less than significant.

Activities involving HPM and HEL systems would be conducted utilizing the applicable health and safety measures as identified in Section 3.10. These RF-emitting and laser activities would be managed in accordance with appropriate range safety regulations and approved SOPs. Therefore, potential impacts from HPM and HEL activities would not be significant.

Range ground activities do not extend off DoN-controlled property. Since the use and associated handling of munitions at target and test sites would be conducted according to established safety procedures, potential impacts on public health and safety would not be significant.

Nonmilitary activities do not create significant safety risks to the public. Current Native American, research and education, and recreational activities do not expose the public to health or safety hazards; therefore, no significant impacts would be anticipated. Implementation of the CLUMP would integrate the Installation's environmental and operational planning and review processes and this would represent a beneficial impact.

No cumulative public health and safety impacts would be expected due to other cumulative projects. Because these projects involve lands located off-installation, they would not conflict with on-installation mission activities or areas of existing hazards. These projects would not involve or develop activities that expose people to existing or increased safety hazards; therefore, no significant cumulative public health and safety impacts would occur.

Because RDAT&E activities would continue in accordance with approved safety procedures, the overall potential impact to public health and safety from implementing the Proposed Action would not be significant (Table 4.10-1).

4.10.3 Baseline Alternative/Updated No Action Alternative (Alternative 2)

The Baseline Alternative/Updated No Action Alternative includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013) with continuation of military activities at current levels. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised, as appropriate, and implemented to manage land use and environmental resources at NAWSCL.

4.10.3.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. As a legislative action, the public land withdrawal renewal, in itself, would not have any direct or indirect impacts on public health and safety at NAWSCL or in the region. The analysis for potential impacts to public health and safety is presented in the subsections below.

Table 4.10-1
Proposed Action (Alternative 1) – Summary of Public Health and Safety Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures
(Page 1 of 2)

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses – Range Access/Safety	
No significant impacts.	*Mitigation Measures* No mitigation measures. *Impact Avoidance and Minimization Measures* Access control would continue through the use of existing systems, including badging authorized personnel, perimeter fencing, roadblocks, barricades, locked gates, and guard posts.
Military Uses – Target and Test Area Use	
No significant impacts.	*Mitigation Measures* No mitigation measures. *Impact Avoidance and Minimization Measures* Test and training activities would be conducted in accordance with established safety policies and procedures.
Military Uses – Aircraft Flight Events	
No significant impacts.	*Mitigation Measures* No mitigation measures. *Impact Avoidance and Minimization Measures* Current range and airspace safety procedures would continue to be implemented. Civilian and commercial aircraft would continue to be restricted from the airspace over the ranges when they are being used for military activities. Implementation of the existing BASH program would continue to keep pilots advised of bird movements to minimize the potential for bird strikes.

Table 4.10-1
Proposed Action (Alternative 1) – Summary of Public Health and Safety Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures
(Page 2 of 2)

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Military Uses – Electromagnetic Frequency and Laser Events	
No significant impacts.	*Mitigation Measures* No mitigation measures. *Impact Avoidance and Minimization Measures* RF-emitting devices would be limited to PELs for controlled environments and would follow approved SOPs. Safety exclusion zones would be established and clearly delineated. Laser activities would be managed in accordance with appropriate range safety regulations and approved SOPs. Backdrops, buffer zones, beam path restrictors, and administrative controls would be in place during ground-based laser activities. Non-essential personnel would be evacuated from the area prior to initiating tests.
Military Uses – Range Ground Events	
No significant impacts.	*Mitigation Measures* No mitigation measures. *Impact Avoidance and Minimization Measures* Continue to conduct test and training activities in accordance with established range safety policies and procedures. Continue policy of clearing UXO and removing MPPEH from the ranges after tests are conducted as conditions allow.
Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
No significant impacts.	No mitigation measures. Impact avoidance and minimization measures addressed above.
Overall Summary	
No significant impacts.	No mitigation measures. Impact avoidance and minimization measures addressed above.

Military Uses

Range Access/Safety

Under the Baseline Alternative/Updated No Action Alternative, the Test Management Office, in conjunction with the test sponsor and RSO, would continue to conduct test and training activities in accordance with established safety policy and procedures. In addition, the DoN would continue its policy of clearing UXO and removing MPPEH from the ranges after tests are conducted as conditions allow. Use of target or test sites on the ranges would continue to be conducted in a manner that ensures compatibility with existing safety guidelines and procedures, and is consistent with established ESQD regulations. With one exception, ESQD arcs would remain within NAWSCL boundaries and would not affect public safety. The one ESQD arc that extends off-installation is located on Randsburg Wash Road and extends onto BLM lands. This arc is established for a railroad siding built for the off-loading of munitions deliveries to NAWSCL. The DoN has obtained a perpetual right-of-way authorization from BLM to address the handling of munitions items at this remote site. The areas within and adjacent to the arc consist of undeveloped BLM land, and munitions handling at the site is conducted in strict accordance to established safety procedures. The site is used infrequently (approximately six times per year) for munitions delivery. Since the area is used infrequently and in accordance with established safety policies, and is in a remote and undeveloped location, the risk to public safety is considered to be very low. In addition, weapons footprints associated with range ground activities do not extend off DoN-controlled property. Since the use and associated handling of munitions at target and test sites would be conducted according to established safety procedures, potential impacts on public health and safety would not be significant.

Airfield and Flight Safety

Under the Baseline Alternative/Updated No Action Alternative, implementation of the existing BASH program would continue to keep pilots advised of bird movements to minimize the potential for bird strikes. Civilian and commercial air traffic would continue to be restricted from the airspace over the ranges when they are being used for military activities. Range flight activities would continue to be conducted in accordance with established safety and scheduling procedures and would not increase the potential for flight safety risks or risks to the public. Therefore, potential public health and safety impacts associated with current range flight events would not be significant.

Under the Baseline Alternative/Updated No Action Alternative, established operating safety procedures that reduce the potential for aircraft accidents would continue to be implemented. Of the 26 aircraft incidents related to airfield operations occurring from 1958 to 2010, only 2 incidents occurred off-installation. Most occurred in areas designated as APZs, which are contained entirely on-installation. Based on historic records, it is expected that all off-installation incidents would occur in proximity to NAWSCL lands on adjacent undeveloped public lands. Airfield flight events would continue to be carefully scheduled and monitored to ensure that flight events would not conflict with one another. Civilian and commercial air traffic would continue to be restricted from the airspace over the airfield. Airfield flight activities would continue to be conducted in accordance with established safety and scheduling procedures and would not increase the potential for flight safety risks or risks to the public. Therefore, potential impacts to public health and safety associated with current airfield flight events would not be significant.

Electromagnetic Frequency Events

Personnel working with RF-emitting devices, including HPM systems, would be limited to PELs for controlled environments and would follow approved SOPs. Safety exclusion zones would be established and clearly delineated. As a safety precaution, non-essential personnel would be evacuated from the area prior to initiating tests.

Implementation of the measures provided in Section 3.10.8.1 would ensure that non-involved workers (e.g., personnel working at Mainsite) and members of the public would not be exposed to EMR levels greater than the PELs for uncontrolled environments. Therefore, potential impacts from RF-emitting devices would not be significant.

Laser Events

Activities involving HEL systems would be conducted utilizing the applicable health and safety measures as identified in Section 3.10.10. These laser activities would be managed under the appropriate range safety regulations and approved SOPs. Backdrops, buffer zones, beam path restrictors, and administrative controls would be in place during ground-based laser activities.

The use of engineered and administrative controls would minimize the health and safety risks associated with laser activities associated with this alternative. These controls would minimize the potential for ocular damage or impairment resulting from exposure to laser (optical) radiation, while also minimizing potential skin damage. Also, any non-beam hazards associated with the laser systems should be adequately controlled based on the in-place engineered and administrative controls during lasing activities. Therefore, potential impacts from laser activities would not be significant.

Range Ground Events

Under the Baseline Alternative/Updated No Action Alternative, the Test Management Office, in conjunction with the test sponsor and RSO, would continue to conduct test and training activities in accordance with established safety policies and procedures described in the RSM. In addition, NAWSCL would continue its policy of clearing UXO and removing MPPEH from the ranges after tests are conducted as conditions allow. Use of target or test sites on the ranges would continue to be conducted in a manner that ensures compatibility with existing safety guidelines and procedures and is consistent with established ESQD regulations. With one exception, ESQD arcs would remain within the Installation's boundary and would not affect public safety. The one ESQD arc that extends off-installation is located on Randsburg Wash Road and extends onto BLM lands. This arc is established for a railroad siding built for the off-loading of munitions deliveries to NAWSCL. NAWSCL has obtained a perpetual right-of-way authorization from BLM to address the handling of munitions items at this remote site. The areas within and adjacent to the arc consist of undeveloped BLM land, and munitions handling at the site is conducted in accordance with established safety procedures. The site is used infrequently (approximately six times per year) for munitions delivery. Since the area is used infrequently and in accordance with established safety policies, and is in a remote and undeveloped location, the risk to public safety is considered to be very low. In addition, weapons footprints associated with range ground activities do not extend off DoN-controlled property. Since the current use and associated handling of munitions at target and test sites would be conducted according to established safety procedures, potential impacts to public health and safety would not be significant.

GTT activities would continue to be conducted in approved areas throughout the NAWSCL ranges as described in Section 2.3.1.2, Range Ground Events. Since current GTT activities are conducted entirely within Installation boundaries, they do not pose a risk to public safety. Therefore, potential impacts to public health and safety from continuing GTT activities would not be significant.

Nonmilitary Uses

Under the Baseline Alternative/Updated No Action Alternative, existing Native American, research and education, and recreational activities would continue at NAWSCL. Proposed nonmilitary uses falling into these general categories would continue to be considered on a case-by-case basis. These activities would continue to be conducted in accordance with established safety policy and procedures. These types of activities do not create significant safety risks to the public. Use of munitions or firearms is not permitted when these types of activities are occurring. Current Native American, research and education,

and recreational activities do not expose the public to health or safety hazards; therefore, no significant impacts would be anticipated.

CLUMP Implementation

Under the Baseline Alternative/Updated No Action Alternative, implementation of the CLUMP would formalize and integrate the Installation's environmental and operational planning and review processes. The environmental review process is applied to military and nonmilitary actions having the potential to impact health and safety risks. This review process provides an analysis of actions that may increase risks associated with flight events, ground activities, munitions use, and EMR use. The process would require that appropriate management efforts be applied to those actions to comply with established health and safety requirements. As such, implementation of the CLUMP would represent a beneficial impact.

Cumulative Impacts

Cumulative impacts anticipated under the Baseline Alternative/Updated No Action Alternative would be similar to the likely cumulative impacts associated with the Proposed Action, only to a somewhat lesser extent or intensity, insofar as NAWSCL's cumulative impacts would be expected to be somewhat lower under the Baseline Alternative/Updated No Action Alternative because this alternative would not include the potential increase in RDAT&E and training activities.

The Baseline Alternative/Updated No Action Alternative would not result in any changes to public health and safety at NAWSCL. Ongoing military activities would continue to be conducted in accordance with approved security- and safety-related SOPs. These SOPs ensure that there would be no increased public health and safety risks beyond the Installation's boundaries. Considering this, implementation of the Baseline Alternative/Updated No Action Alternative would not have significant impacts to public health and safety.

On-installation construction projects (e.g., solar energy field and new school construction) and off-installation construction projects (e.g., Ridgecrest Solar Power Project, Deep Rose Geothermal Exploratory Project, Haiwee Geothermal Leasing Area, Digital 395 Project, and the proposed zeolite mine) could pose risks to persons accessing the construction areas. Safety risks to the public would be minimized by access controls, fencing of construction sites, and implementing standard construction safety procedures. Due to the implementation of the safety procedures and access restrictions, potential impacts associated with public health and safety at the sites would not be significant.

The accommodation of evolving mission needs would likely result in minor changes to health and safety precautionary measures (e.g., expanded EOD training area); based on the number of training events, types of activities, and the fact that test and training activities undergo strict safety reviews, potential health and safety concerns from these activities is not anticipated to have appreciable public health and safety effects.

Agricultural development in the area could result in an increase in the presence of birds, which could increase the potential BASH hazard for pilots. Proposed agricultural development is over 6 miles from Armitage Airfield and pilots would typically fly at altitudes where birds are less prevalent (birds will most likely remain near the ground surface); therefore potential BASH increases should be minimal.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative impacts to public health and safety as it relates to other military land withdrawal actions in the region.

No cumulative public health and safety impacts would be expected due to off-installation projects. Because these projects involve lands located off-installation, often at very considerable distances, they would not conflict with on-installation mission activities or areas of existing hazards, such as concentrated munitions use areas. These projects would not involve or develop activities that expose people to existing or increased safety hazards, and the potential for any potential health and safety risk associated with such projects would be different than the potential risks associated with RDAT&E activities at NAWSCL (with the exception of on-installation construction projects); therefore, activities under the Baseline Alternative/Updated No Action Alternative are not expected to result in significant cumulative effects to public health and safety in combination with other projects in the region.

4.10.3.2 Mitigation Measures and Impact Avoidance and Minimization Measures

No mitigation measures are proposed; however, several impact avoidance and minimization measures would continue to be implemented, including:

- Access control to the installation would continue through the use of existing systems, including badging authorized personnel, perimeter fencing, roadblocks, barricades, locked gates, and guard posts.
- Test and training activities would continue to be conducted in accordance with established safety policies and procedures.
- Current range and airspace safety procedures would continue to be implemented.
- Civilian and commercial aircraft would continue to be restricted from the airspace over the ranges when they are being used for military activities.
- Implementation of the existing BASH program would continue to keep pilots advised of bird movements to minimize the potential for bird strikes.
- RF-emitting devices would be limited to PELs for controlled environments and would follow approved SOPs.
- Safety exclusion zones for RF-emitting equipment would be established and clearly delineated.
- Laser activities would be managed in accordance with appropriate range safety regulations and approved SOPs.
- Backdrops, buffer zones, beam path restrictors, and administrative controls would be in place during ground-based laser activities.
- Non-essential personnel would be evacuated from the area prior to initiating laser tests.
- Continue policy of clearing UXO and removing MPPEH from the ranges after tests are conducted as conditions allow.

Impacts Summary

Since the land withdrawal is a renewal of a previously approved land withdrawal, it would not have any direct or indirect impact on public health and safety at NAWSCL or in the region. Implementation of the existing range access/safety procedures to prevent unauthorized personnel from accessing the ranges would result in no significant impacts. Test and training activities would continue to be conducted in

accordance with established safety policies and procedures. With one exception, ESQD arcs would remain within the NAWSCL boundaries and would not affect public safety. The one ESQD arc extends onto BLM lands and the DoN has obtained a perpetual right-of-way authorization from BLM to handle munitions items at this remote site. Since the area is used infrequently and in accordance with established safety policies, and is in a remote and undeveloped location, the potential impact to public health and safety is not considered to be significant.

Range flight events would continue to be conducted in accordance with established procedures, with the safety of pilots and people in the surrounding communities as the primary concern. Implementation of the existing BASH program would minimize the potential for bird strikes. The limited amount of time an aircraft is over any specific geographic location, combined with the relatively low population density of the ROI, lowers the probability that an aircraft mishap would occur over a populated area. These ongoing safety procedures would minimize the potential risk of continued range flight events to a level that is not significant. Aircraft activity at Armitage Airfield would continue to be conducted in accordance with established safety procedures with the safety of its pilots and people in the surrounding communities as the primary concern. These ongoing safety procedures would minimize the potential risk of ongoing airfield flight events to a level that is not significant.

Activities involving HPM and HEL systems would be conducted utilizing the applicable health and safety measures as identified in Section 3.10. These RF-emitting and laser activities would be managed in accordance with appropriate range safety regulations and approved SOPs. Therefore, potential impacts from HPM and HEL activities would not be significant.

Range ground activities do not extend off DoN-controlled property. Since the use and associated handling of munitions at target and test sites would be conducted according to established safety procedures, potential impacts on public health and safety would not be significant.

Nonmilitary activities do not create significant safety risks to the public. Current Native American, research and education, and recreational activities do not expose the public to health or safety hazards; therefore, no significant impacts would be anticipated. Implementation of the CLUMP would integrate the Installation's environmental and operational planning and review processes and this would represent a beneficial impact.

Ongoing military activities would continue to be conducted in accordance with approved security- and safety-related SOPs. The DoN SOPs ensure that there would be no increased health and safety risks. Therefore, implementation of the Baseline Alternative/Updated No Action Alternative in combination with the other cumulative projects would not have significant cumulative impacts to public health and safety.

Because RDAT&E activities would continue in accordance with approved safety procedures, the overall potential impact to public health and safety from continuation of the Baseline Alternative/Updated No Action Alternative would not be significant (Table 4.10-2).

4.10.4 No Action Alternative (Alternative 3)

Because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of "no action" conditions at NAWSCL; therefore, the discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed (please see discussion in Section 2.3.3). For the purposes of the Final EIS/LEIS, the Baseline Alternative/Updated No Action Alternative is considered to effectively represent "no action" conditions or status quo (see Section 4.10.3).

Table 4.10-2
Baseline Alternative/Updated No Action Alternative (Alternative 2) – Summary of Public Health and Safety Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures
(Page 1 of 2)

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses – Range Access/Safety	
No significant impacts.	*Mitigation Measures* No mitigation measures. *Impact Avoidance and Minimization Measures* Access control would continue through the use of existing systems, including badging authorized personnel, perimeter fencing, roadblocks, barricades, locked gates, and guard posts.
Military Uses – Target and Test Area Use	
No significant impacts.	*Mitigation Measures* No mitigation measures. *Impact Avoidance and Minimization Measures* Test and training activities would be conducted in accordance with established safety policies and procedures.
Military Uses – Aircraft Flight Events	
No significant impacts.	*Mitigation Measures* No mitigation measures. *Impact Avoidance and Minimization Measures* Current range and airspace safety procedures would continue to be implemented. Civilian and commercial aircraft would continue to be restricted from the airspace over the ranges when they are being used for military activities. Implementation of the existing BASH program would continue to keep pilots advised of bird movements to minimize the potential for bird strikes.

Table 4.10-2
Baseline Alternative/Updated No Action Alternative (Alternative 2) – Summary of Public Health and Safety Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures
(Page 2 of 2)

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Military Uses – Electromagnetic Frequency and Laser Events	
No significant impacts.	*Mitigation Measures* No mitigation measures. *Impact Avoidance and Minimization Measures* RF-emitting devices would be limited to PELs for controlled environments and would follow approved SOPs. Safety exclusion zones would be established and clearly delineated. Laser activities would be managed in accordance with appropriate range safety regulations and approved SOPs. Backdrops, buffer zones, beam path restrictors, and administrative controls would be in place during ground-based laser activities. Non-essential personnel would be evacuated from the area prior to initiating tests.
Military Uses – Range Ground Events	
No significant impacts.	*Mitigation Measures* No mitigation measures. *Impact Avoidance and Minimization Measures* Continue to conduct test and training activities in accordance with established range safety policies and procedures. Continue policy of clearing UXO and removing MPPEH from the ranges after tests are conducted as conditions allow.
Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
No significant impacts.	No mitigation measures. Impact avoidance and minimization measures addressed above.
Overall Summary	
No significant impacts.	No mitigation measures. Impact avoidance and minimization measures addressed above.

This page intentionally left blank.

4.11 HAZARDOUS MATERIALS AND WASTES

This section identifies potential impacts on management of hazardous materials and hazardous wastes that may result from implementation of the Proposed Action and alternatives. The impact analysis compares projected conditions after implementation of each alternative to the affected environment and focuses on those activities that have the potential for adverse effects related to hazardous materials/wastes.

4.11.1 Approach to Analysis

Current hazardous materials/waste management practices at NAWSCL are conducted in accordance with applicable Federal and State EPA regulations and DoN requirements. Factors considered in assessing impacts associated with hazardous materials and hazardous wastes are the extent or degree to which an action would significantly increase the amount of hazardous materials used or the amount of hazardous wastes generated (including waste generated from spills). Problems arise if Installation facilities would not be adequate to manage the increased amount of hazardous materials used/stored, or if existing hazardous waste permit conditions would be exceeded.

Each of the three alternatives was analyzed to identify those actions that could affect the amount of hazardous material used and the amount of hazardous wastes generated. As a result of that review, range flight events, airfield flight events, and range ground activities (including target and test site use and GTT) were identified as having the potential to use hazardous materials or generate hazardous wastes. The analysis of range flight events and airfield flight events was combined because the hazardous materials used and hazardous wastes generated by both of these activities are managed through routine maintenance conducted at Armitage Airfield.

4.11.2 Proposed Action (Alternative 1)

The Proposed Action includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013); revision and implementation of the CLUMP; and accommodation of an increase in RDAT&E and training activities of up to 25 percent, expansion of unmanned aerial and surface systems, and expansion of existing and introduction of evolving DE weapons development. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised and implemented to manage land use and environmental resources.

NAWSCL is inspected on a routine basis by a variety of regulatory agencies to ensure compliance with hazardous materials/hazardous waste management regulations. In accordance with hazardous wastes regulations, the California EPA/DTSC inspects the permitted RCRA HWSTF annually. Local CUPAs from Kern, San Bernardino, and Inyo counties also routinely inspect hazardous materials requirements and temporary accumulation areas for hazardous wastes under state authority. In addition, the DoN conducts periodic inspections of hazardous materials/wastes activities at NAWSCL. Current management practices would remain in place, and the volume of hazardous materials used and hazardous wastes generated is expected to increase by up to 25 percent. In addition, the HWSTF at Mainsite, the OB/OD facility in Burro Canyon, and the temporary hazardous waste accumulation areas throughout the Installation would remain operational for hazardous waste management. The IRP would also continue to be implemented, and IRP sites would continue to be identified, investigated, and remediated, as appropriate.

4.11.2.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. As a legislative action, the public land withdrawal renewal, in itself, would not have any direct or indirect impacts on management of hazardous materials/waste at NAWSCL. The analysis for potential impacts to hazardous materials and waste management is presented in the subsections below.

Military Uses

Under the Proposed Action, increases in range flight events, airfield flight events, and range ground activities are proposed. Details regarding proposed military uses under this alternative are outlined in Table 2-2 in Chapter 2 of this EIS/LEIS. With the increase in military tempo, older buildings supporting RDAT&E activities may be renovated or demolished, potentially generating lead and asbestos waste. This waste is not likely to be of sufficient volume to cause significant impacts. The following discussion focuses on impacts related to hazardous materials/hazardous wastes as well as MPPEH. Although implementation of the Proposed Action would increase the generation of hazardous wastes associated with air and ground activities by up to 25 percent, the increased generation would continue to be managed in accordance with established procedures and in compliance with existing requirements and EOs. Therefore, impacts related to hazardous waste generation under the Proposed Action would not be significant.

Range and Airfield Flight Events

Under the Proposed Action, an increase in flight events at NAWSCL would increase demand for aircraft fuels, oils, hydraulic fluids, transmission fluids, and other hazardous materials. An up to 25 percent increase in flight events is expected to increase the amount of hazardous wastes generated from the increase in hazardous materials use by approximately 3 tons (2.7 metric tons) over baseline conditions. When fully implemented, the annual hazardous waste generated by NAWSCL airfield activities would be approximately 15 tons (14 metric tons) per year, a portion of which would be recycled. As noted in Section 3.11, the HWSTF is operating at approximately 75 percent of capacity, with a current RCRA waste throughput of 1,099.6 tons (997.5 metric tons) and a capacity of 1,458 tons (1,323 metric tons) per year. Additionally, the Installation's non-RCRA permitted capacity is 292 tons (264.9 metric tons) per year, with current throughput of 175 tons (158.8 metric tons). Therefore, the total generation, including the increase, would be within the Installation's permitted hazardous waste management capabilities and would have no significant impact on hazardous waste management at NAWSCL.

Range Ground Events

Ground-based activities occurring at NAWSCL include actions that support RDAT&E test and training events, GTT activities, and facilities operations and maintenance activities. Since no hazardous waste accumulation areas or IRP sites are located within target impact or GTT areas associated with the Proposed Action, the following discussion focuses on hazardous waste generation as well as MPPEH associated with proposed range ground activities.

Under the Proposed Action, an up to 25 percent increase in munitions use would generate approximately 75 additional tons (68 metric tons) of hazardous wastes and MPPEH. When fully implemented, the annual increase of hazardous wastes and MPPEH generated by munitions use at targets and test sites would be 375 tons (340 metric tons) per year. Energetic range residue items that are no longer useful to the mission would be destroyed via range clearance. All other non-energetic hazardous wastes generated at the target and test sites would follow the Installation's standard RCRA waste management processes. MPPEH would be collected and transferred to the MPPEH Collection Facility. Wastes generated by the Proposed Action from munitions use at targets and test sites would be within the Installation's

management capacity and would have no significant impact on hazardous material/waste management at NAWSCL.

Energetic Tests. Energetic tests (i.e., test, training, and clearance activities related to the use of energetic materials such as propellants and explosives) would increase by up to 25 percent. The tests would be conducted within established disturbed areas within the North Range and South Range. Hazardous materials storage/usage would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits; therefore, no significant impact on hazardous materials/waste management at NAWSCL would be anticipated.

CIED Tests. Under the Proposed Action, an up to 25 percent increase in CIED tests would result in approximately 2,094 events annually. CIED tests would be conducted within established target and test areas, roadways or road shoulders, or established instrumentation sites. Hazardous materials storage/use would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits; therefore, no significant impact on hazardous materials/waste management at NAWSCL would be anticipated.

EOD Training. Under the Proposed Action, EOD training classes at Darwin Wash would be increased by up to 25 percent. Hazardous materials storage/usage would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits; therefore, no significant impact on hazardous materials/waste management at NAWSCL would be anticipated.

Seabee Water-Well-Drilling Training. Under the Proposed Action, Seabee water-well-drilling training would continue at current levels on disturbed lands that have undergone environmental analysis, and in some cases undisturbed sites after proper environmental analysis. These activities would have no significant impact on hazardous materials/waste management at NAWSCL.

Test Tracks. Test track activities at the SNORT facility would increase to approximately 30 events annually, and test track activities at the G-4 Track would increase to approximately 7 events annually, for a total of 37 annual test track events at NAWSCL. Hazardous materials storage/usage would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits; therefore, no significant impact on hazardous materials/waste management at NAWSCL would be anticipated.

Unmanned Ground Systems. UGS activities would be expanded from current conditions. Group 1 UGS events would increase to approximately 1,144 test hours annually, Group 2 UGS events would increase to approximately 728 test hours annually, and Group 3 UGS events would increase to approximately 312 test hours annually. Hazardous materials storage/usage would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits; therefore no significant impact on hazardous materials/waste management at NAWSCL would be anticipated.

Ground Troop Training. Under the Proposed Action, an up to 25 percent increase in GTT activities would increase the demand for vehicle fuels, oils, hydraulic fluids, transmission fluids, and vehicle batteries. An up to 25 percent increase in GTT activities is expected to generate an additional 10 tons (4.5 metric tons) of hazardous wastes. When fully implemented, the hazardous wastes generated by NAWSCL GTT activities would be approximately 15 tons (14 metric tons) per year, a portion of which would be recycled. This increase would be within the Installation's permitted hazardous waste management capabilities (i.e., 1,166-ton [1,058-metric-ton] capacity). Hazardous materials storage/usage would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits; therefore, no significant impact on hazardous materials/waste management at NAWSCL would be anticipated.

DE Events. The tempo of DE activities would increase under the Proposed Action. HEL activities would increase by up to 65 to approximately 115 test days annually; HPM activities would also increase by up to 65 to approximately 115 test days annually. Hazardous materials storage/usage would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits; therefore, no significant impact on hazardous materials/waste management at NAWSCL would be anticipated.

Munitions Expenditures. Due to increased activities on NAWSCL, munitions expenditures would be anticipated to increase by up to 25 percent over current activities. Bomb usage would increase by up to 2,882; expenditure of gun munitions within the North Range, Echo Range, and Superior Valley would increase by up to 24,472; expenditure of gun munitions within Darwin Wash (North Range) would increase by up to 658,560; use of rockets would increase by up to 178; use of missiles would increase by up to 27; and use of other munitions items such as flares and chaff would increase by up to 620. Hazardous materials storage/usage would remain within reportable limits and hazardous waste generation, as well as MPPEH generation, would remain within the Installation's permitted limits; therefore, no significant impact on hazardous materials/waste management at NAWSCL would be anticipated.

Nonmilitary Uses

Under the Proposed Action, existing Native American, geothermal, research and education, and recreational activities would continue. Nonmilitary uses would not affect the Installation's supply of hazardous materials and would not generate hazardous wastes that must be managed. A slight potential would exist for fluid discharges from motor vehicles accessing NAWSCL for nonmilitary purposes. However, any vehicle discharge would be incidental and its impact on the NAWSCL environment would be considered negligible. Therefore, nonmilitary uses would have no significant impact on hazardous materials/waste management at NAWSCL.

CLUMP Implementation

Implementation of the CLUMP would formalize and integrate the Installation's environmental planning and review processes. The environmental review process is applied to military and nonmilitary actions using hazardous materials and generating hazardous wastes. This review process provides an analysis of actions that may use hazardous materials and generate hazardous wastes, and would require that appropriate management efforts be applied to those actions to comply with RCRA requirements. As such, implementation of the CLUMP would represent a beneficial impact.

Cumulative Impacts

The Proposed Action in combination with other projects in the region could result in a short-term increase in hazardous materials use as necessary to support construction-related activities and increased RDAT&E and training activities. Off-installation activities would not affect the Installation's management of hazardous materials, and would not generate hazardous wastes that must be managed at NAWSCL. Standard hazardous materials handling and safety practices would be employed for on-installation construction projects (e.g., solar energy field and new school construction). Although hazardous materials could be used and hazardous waste could be generated temporarily during on- and off-installation construction activities, standard procedures would be used in their handling and disposal; therefore, no significant impacts would be anticipated.

The accommodation of evolving mission needs would likely result in minor changes to the types and quantities of hazardous materials used and hazardous waste generated (e.g., expanded EOD training area); based on the number of training events and types of activities, potential hazardous materials/waste management concerns from these activities is not anticipated to have cumulative effects from the use of hazardous materials or the generation of hazardous waste.

The Ridgecrest Solar Power Project is expected to use several hazardous materials and generate waste during operation. The Project has been designed so that large quantities of volatile, hazardous chemicals are not required for construction or operation. Through implementation of engineering and administrative controls detailed in the EIS for the project (e.g., implementation of programs to address hazardous materials storage and security, emergency response, employee training, hazard recognition, fire safety, first-aid/emergency medical, hazardous materials release containment/control, hazard communication, personal protective equipment, and release reporting), potential impacts from these hazardous materials and hazardous waste would be mitigated to less than significant (Solar Millennium 2009).

Operation of the Digital 395 Project is not expected to involve hazardous materials or hazardous waste. Once temporary construction-related increases in the use of hazardous materials and the generation of hazardous waste have subsided, no further hazardous materials or wastes are expected to be associated with the project. Therefore, no significant impacts from hazardous materials and hazardous waste are expected from constructing and operating the Digital 395 Project.

Provisions of the City of Ridgecrest General Plan would support low intensity and open space land uses near NAWSCL to help support compatibility with the NAWSCL mission, thus significant increases in hazardous materials use and hazardous waste generation in the region are not anticipated. The continued operation of the geothermal plant at Coso KGRA, the Deep Rose Geothermal Exploratory Project, Haiwee Geothermal Leasing Area, and the proposed zeolite mine are not expected to use or generate significant quantities of hazardous materials or waste. Therefore, these projects are not anticipated to have significant impacts from the use of hazardous materials and the generation of hazardous waste.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative impacts to hazardous materials and waste management as it relates to other military land withdrawal actions in the region.

Potential impacts from the use of hazardous materials and the generation of hazardous waste from off-installation development projects are localized or would affect areas that are distant from NAWSCL. The potential impacts discussed above for the Proposed Action are not expected to increase in significance when considered in combination with impacts from other on- and off-installation actions. Therefore, activities under the Proposed Action are not expected to result in significant cumulative effects to the use of hazardous materials and the generation of hazardous waste in combination with other projects in the region.

4.11.2.2 Mitigation Measures and Impact Avoidance and Minimization Measures

No mitigation measures or impact avoidance and minimization measures are proposed.

Summary of Impacts

Since the land withdrawal is a renewal of a previously approved land withdrawal, it would not have any direct or indirect impact on management of hazardous materials/hazardous waste at NAWSCL. The generation of hazardous wastes would continue to be managed in accordance with established procedures and in compliance with existing requirements and EOs. The total generation of wastes from the Proposed Action would be within the Installation's permitted hazardous waste management capabilities and would have no significant impact on hazardous waste management at NAWSCL. Hazardous materials storage/usage from military activities would remain within reportable limits and

hazardous waste generation would remain within the Installation's permitted limits; therefore, no significant impact on hazardous materials/waste management would be anticipated.

Nonmilitary uses would not affect the Installation's supply of hazardous materials and would not generate hazardous wastes that must be managed and would therefore have no significant impact on hazardous materials/waste management at NAWSCL. The CLUMP would formalize and integrate the Installation's environmental planning and review processes, which would represent a beneficial impact.

The Proposed Action in combination with other projects in the region could result in a short-term increase in hazardous materials use as necessary to support construction-related activities and increased RDAT&E and training activities. Standard procedures would be used in their handling and disposal; therefore, no significant cumulative impacts would be anticipated.

Because RDAT&E activities would continue, current management practices for hazardous materials/wastes would remain in place; therefore, the overall potential impact to hazardous materials and waste management from implementation of the Proposed Action would not be significant (Table 4.11-1).

Table 4.11-1
Proposed Action (Alternative 1) – Summary of Hazardous Materials and Wastes Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses – Range and Airfield Flight Events	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses – Range Ground Events	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Overall Summary	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.

4.11.3 Baseline Alternative/Updated No Action Alternative (Alternative 2)

The Baseline Alternative/Updated No Action Alternative includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013), with continuation of military activities at current levels. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised, as appropriate, and implemented to manage land use and environmental resources at NAWSCL.

4.11.3.1 Impacts

The beneficial impacts of existing hazardous material and waste management programs at NAWSCL under the Baseline Alternative/Updated No Action Alternative would be the same as those discussed for the Proposed Action. Current management practices would remain in place, and the volume of hazardous materials used and hazardous waste generated would continue to be well within the Installation's operating capacities and permit conditions. The HWSTF at Mainsite, the OB/OD facility in Burro Canyon, and the temporary hazardous wastes accumulation areas throughout the Installation would remain operational for hazardous waste management. The IRP would continue to be implemented under this alternative, and IRP sites would continue to be identified, investigated, and remediated in accordance with programmed activities and regulatory requirements.

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. As a legislative action, the public land withdrawal renewal, in itself, would not have any direct or indirect impacts on management of hazardous materials/waste at NAWSCL. The analysis for potential impacts to hazardous materials/waste management is presented in the subsections below.

Military Uses

Under the Baseline Alternative/Updated No Action Alternative, established military RDAT&E, training and support activities, and associated military land uses would continue at existing levels and within areas currently designated for such uses. Additional information regarding existing levels of military use is outlined in Table 2-2 in Chapter 2 of this EIS/LEIS.

Range and Airfield Flight Events

Under the Baseline Alternative/Updated No Action Alternative, range and airfield flight events would continue to use hazardous materials. NAWSCL flight events currently generate approximately 12 tons (11 metric tons) of hazardous waste per year from hazardous materials usage, which is readily accommodated through the HWSTF. Therefore, flight events would not have a significant impact on hazardous materials and waste management at NAWSCL.

Range Ground Events

Ground-based activities occurring at NAWSCL include actions that support RDAT&E test and training events, GTT activities, and facilities operations and maintenance activities. Since no hazardous waste accumulation areas or IRP sites are located within target impact or GTT areas, the following discussion focuses on hazardous waste generation associated with range ground activities. Range ground activities generate hazardous wastes as well as MPPEH. Range ground activities currently generate approximately 40 tons (36 metric tons) of hazardous wastes. Energetic range residue items that are no longer useful to the mission would be destroyed via range clearance. All other non-energetic hazardous wastes would follow the Installation's standard RCRA waste management processes. MPPEH would be collected and transferred to the MPPEH Collection Facility. Wastes generated by munitions use at targets and test sites

would be within the Installation's management capacity and would have no significant impact on hazardous material/waste management at NAWSCL.

Target and Test Site Use. Ongoing munitions use at target and test sites currently generates approximately 300 tons (272.2 metric tons) of MPPEH annually. In addition, there is an estimated 1,200 tons (1,089 metric tons) of MPPEH from historic range testing and training activities. A comprehensive Range cleanup program has been implemented at NAWSCL. Munitions known to contain live explosives and to pose a safety risk are destroyed on the range as a range clearance activity by qualified personnel. MPPEH that is considered safe to transport, is transferred to the MPPEH Collection Facility and is processed for scrap metal recycling. Range cleanup efforts remove approximately 400 tons (363 metric tons) of MPPEH annually (300 tons [272 metric tons] from ongoing munitions and target use and 100 tons [91 metric tons] of historic MPPEH). Hazardous wastes identified during processing range cleanup activities are transferred to the HWSTF for appropriate disposition. Hazardous materials storage/usage would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits; therefore, no significant impact on hazardous materials/waste management at NAWSCL would be anticipated.

Energetic Tests. Energetic tests would continue within established disturbed areas within the North Range and South Range. Hazardous materials storage/usage would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits; therefore, no significant impact on hazardous materials/waste management at NAWSCL would be anticipated.

CIED Tests. Under the Baseline Alternative/Updated No Action Alternative, approximately 1,675 CIED tests would be conducted annually. CIED tests would be conducted within established target and test areas, roadways or road shoulders, or instrumentation sites. Hazardous materials storage/usage would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits; therefore, no significant impact on hazardous materials/waste management at NAWSCL would be anticipated.

EOD Training. Under the Baseline Alternative/Updated No Action Alternative, EOD training classes would be conducted at Darwin Wash at current levels. Hazardous materials storage/usage would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits; therefore, no significant impact on hazardous materials/waste management at NAWSCL would be anticipated.

Seabee Water-Well-Drilling Training. Under the Baseline Alternative/Updated No Action Alternative, Seabee water-well-drilling training would continue at current levels on disturbed lands that have undergone environmental analysis, and, in some cases, undisturbed sites after proper environmental analysis. These activities would not have a significant impact on hazardous materials/waste management at NAWSCL.

Test Tracks. Test track activities would continue at current levels under the Baseline Alternative/Updated No Action Alternative. Test track activities at SNORT would consist of approximately 15 events annually, and test track activities at G-4 Track would consist of approximately 3 events annually, for a total of 18 annual test track events at NAWSCL. Hazardous materials storage/usage would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits; therefore, no significant impact on hazardous materials/waste management at NAWSCL would be anticipated.

Unmanned Ground Systems. UGS activities would continue at current levels. Group 1 UGS events would remain at approximately 364 test hours annually, Group 2 UGS events would remain at approximately 234 test hours annually, and Group 3 UGS events would remain at approximately 96 test hours annually.

Hazardous materials storage/usage would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits; therefore, no significant impact on hazardous materials/waste management at NAWSCL would be anticipated.

Ground Troop Training. GTT units that enter the Installation bring their own vehicles and are otherwise self-contained. It is estimated that GTT activities currently generate approximately 5 tons (4.5 metric tons) of hazardous wastes per year, or 15 percent of the hazardous waste generated by range ground activities. GTT activities using wheeled vehicles would continue to generate small amounts of hazardous waste from material spills of vehicular operations, including fuel, lubricating oils, hydraulic fluid, and transmission fluid. Cleanup of these wastes would continue to be conducted according to established range cleanup procedures in accordance with RCRA requirements. Hazardous materials storage/usage would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits; therefore, no significant impact on hazardous materials/waste management at NAWSCL would be anticipated.

Directed Energy Events. The tempo of DE activities would continue at current levels under the Baseline Alternative/Updated No Action Alternative, at approximately 100 annual test days. Hazardous materials storage/usage would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits; therefore, no significant impact on hazardous materials/waste management at NAWSCL would be anticipated.

Munitions Expenditures. Munitions expenditures would continue to occur at current levels at NAWSCL. Hazardous materials storage/usage would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits; therefore, no significant impact on hazardous materials/waste management at NAWSCL would be anticipated.

Nonmilitary Uses

Under the Baseline Alternative/Updated No Action Alternative, existing Native American, geothermal, research and education, and recreational activities would continue. Nonmilitary uses would not affect the Installation's supply of hazardous materials and would not generate hazardous waste that must be managed. A slight potential would exist for fluid discharges from motor vehicles accessing NAWSCL for nonmilitary purposes. However, any vehicle discharge would be incidental, and its impact on the NAWSCL environment would be considered negligible. Therefore, nonmilitary uses would have no significant impact on hazardous materials/waste management at NAWSCL.

CLUMP Implementation

Implementation of the CLUMP would formalize and integrate the Installation's environmental planning and review processes. As with the Proposed Action, the environmental review process is applied to military and nonmilitary actions using hazardous materials and generating hazardous waste. This review process provides an analysis of actions that may use hazardous materials and generate hazardous waste, and would require that appropriate management efforts be applied to those actions to comply with RCRA requirements. As such, implementation of the CLUMP would represent a beneficial impact.

Cumulative Impacts

Cumulative impacts anticipated under the Baseline Alternative/Updated No Action Alternative would be similar to the likely cumulative impacts associated with the Proposed Action, only to a somewhat lesser extent or intensity, insofar as NAWSCL's cumulative impacts would be expected to be somewhat lower under the Baseline Alternative/Updated No Action Alternative because this alternative would not include the potential increase in RDAT&E and training activities.

The Baseline Alternative/Updated No Action Alternative, in combination with other projects in the region, would not result in any changes to the management of hazardous materials/wastes at NAWSCL. Ongoing military activities involving the use of hazardous materials or the generation of hazardous waste would be conducted in accordance with the established management and handling procedures discussed above. Although hazardous materials could be used and hazardous waste could be generated temporarily during on- and off-installation construction activities, standard procedures would be used in their handling and disposal; therefore, no significant impacts would be anticipated.

The accommodation of evolving mission needs would likely result in minor changes to the types and quantities of hazardous materials used and hazardous waste generated (e.g., expanded EOD training area); based on the number of training events and types of activities, potential hazardous materials/waste management concerns from these activities is not anticipated to have cumulative effects from the use of hazardous materials or the generation of hazardous waste.

The Ridgecrest Solar Power Project is expected to use several hazardous materials and generate waste during operation. The Project has been designed so that large quantities of volatile, hazardous chemicals are not required for construction or operation. Through implementation of engineering and administrative controls detailed in the EIS for the project (e.g., implementation of programs to address hazardous materials storage and security, emergency response, employee training, hazard recognition, fire safety, first-aid/emergency medical, hazardous materials release containment/control, hazard communication, personal protective equipment, and release reporting), potential impacts from these hazardous materials and hazardous waste would be mitigated to less than significant (Solar Millennium 2009).

Operation of the Digital 395 Project is not expected to involve the use of hazardous materials or the generation of hazardous waste. Once temporary construction-related increases in the use of hazardous materials and the generation of hazardous waste have subsided, no further hazardous materials or wastes are expected to be associated with the project. Therefore, no significant cumulative impacts from the use of hazardous materials and the generation of hazardous waste are expected from constructing and operating the Digital 395 Project.

Provisions of the City of Ridgecrest General Plan would support low intensity and open space land uses near NAWSCL to help support compatibility with the NAWSCL mission, thus significant increases in hazardous materials use and hazardous waste generation in the region are not anticipated. The continued operation of the geothermal plant at Coso KGRA, the Deep Rose Geothermal Exploratory Project, Haiwee Geothermal Leasing Area, and the proposed zeolite mine are not expected to use or generate significant quantities of hazardous materials or waste. Therefore, these projects, in combination with the Baseline Alternative/Updated No Action Alternative, would not have significant impacts from the use of hazardous materials and the generation of hazardous waste.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative impacts to hazardous materials and waste management as it relates to other military land withdrawal actions in the region.

Potential impacts from the use of hazardous materials and the generation of hazardous waste from off-installation development projects are localized or would affect areas that are distant from NAWSCL. The potential impacts discussed above for the Baseline Alternative/Updated No Action Alternative are not expected to increase in significance when considered in combination with impacts from other on- and off-installation actions. Therefore, activities under the Baseline Alternative/Updated No Action Alternative are

not expected to result in significant cumulative effects to the use of hazardous materials and the generation of hazardous waste in combination with other projects in the region.

4.11.3.2 Mitigation Measures and Impact Avoidance and Minimization Measures

No mitigation measures or impact avoidance and minimization measures are proposed.

Summary of Impacts

Since the land withdrawal is a renewal of a previously approved land withdrawal, it would not have any direct or indirect impact on management of hazardous materials/hazardous waste at NAWSCL. The generation of hazardous wastes would continue to be managed in accordance with established procedures and in compliance with existing requirements and EOs. The ongoing generation of wastes would continue to be within the Installation's permitted hazardous waste management capabilities and would have no significant impact on hazardous waste management. Hazardous materials storage/usage from military activities would remain within reportable limits and hazardous waste generation would remain within the Installation's permitted limits; therefore, no significant impact on hazardous materials/waste management would be anticipated.

Nonmilitary uses would not affect the Installation's supply of hazardous materials and would not generate hazardous wastes that must be managed and would therefore have no significant impact on hazardous materials/waste management. The CLUMP would formalize and integrate the Installation's environmental planning and review processes, which would represent a beneficial impact.

The Baseline Alternative/Updated No Action Alternative in combination with other projects in the region could result in a short-term increase in hazardous materials use as necessary to support construction-related activities and increased RDAT&E and training activities. Standard procedures would be used in their handling and disposal; therefore, no significant cumulative impact would be anticipated.

Because RDAT&E activities would continue, current management practices for hazardous materials/wastes would remain in place; therefore, the overall potential impact to hazardous materials/waste management from implementation of the Baseline Alternative/Updated No Action Alternative would be less than significant (Table 4.11-2).

4.11.4 No Action Alternative (Alternative 3)

Because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of "no action" conditions at NAWSCL; therefore, the discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed (please see discussion in Section 2.3.3). For the purposes of the Final EIS/LEIS, the Baseline Alternative/Updated No Action Alternative is considered to effectively represent "no action" conditions or status quo (see Section 4.11.3).

Table 4.11-2
Baseline Alternative/Updated No Action Alternative (Alternative 2) – Summary of Hazardous Materials and Wastes Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses – Range and Airfield Flight Events	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses – Range Ground Events	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Overall Summary	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.

4.12 TRAFFIC AND CIRCULATION

This section identifies potential impacts to traffic and circulation that may result from implementation of the Proposed Action and alternatives. The impact analysis compares projected conditions after implementation of each alternative to the affected environment and focuses on those activities that have the potential to adversely affect traffic and circulation.

4.12.1 Approach to Analysis

This analysis focuses on the potential effects of traffic loading on NAWSCL and the surrounding roadway system that may occur from implementing the Proposed Action and alternatives. Proposed increases in traffic loading were compared to existing roadway capacities and intersection LOS, as identified in Section 3.12. Factors considered in assessing significance included the extent or degree to which implementation of an alternative would result in traffic increases that would exceed the design capacity of an affected portion of the roadway system or the LOS of a key intersection.

Since no increase in employment is associated with range flight events, airfield flight events, or target and test site use, the impact analysis in this section focuses on traffic increases related to GTT exercises and nonmilitary uses. In addition, since traffic generated by employees is readily accommodated on local and regional roadways in the area, no further discussion of employee-generated trips is provided in this section.

4.12.2 Proposed Action (Alternative 1)

The Proposed Action includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013); revision and implementation of the CLUMP; and accommodation of an increase in RDAT&E and training activities of up to 25 percent, expansion of unmanned aerial and surface systems, and expansion of existing and introduction of evolving DE weapons development. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised and implemented to manage land use and environmental resources.

4.12.2.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. As a legislative action, the public land withdrawal renewal, in itself, would not have any direct or indirect impacts on traffic and circulation at NAWSCL or in the region. The analysis for potential impacts to traffic and circulation is presented in the subsections below.

Military Uses

Under the Proposed Action, increases in range flight events, airfield flight events, and range ground activities are proposed. Details regarding proposed military uses under this alternative are outlined in Table 2-2 of this EIS/LEIS.

Ground-based activities occurring at NAWSCL include actions that support RDAT&E and training events, GTT activities, and facilities operations and maintenance activities. GTT activities are expected to increase by up to 25 percent. It is estimated that the transport trucks and additional vehicle support for GTT events would generate approximately 140 vehicles per day on the regional roadways accessing NAWSCL.

Roadway Impacts
A roadway segment evaluation for each alternative was conducted to identify impacts, if any, to the roads providing access to NAWSCL. Consistent with the methodology set forth in Section 3.12.3, LOS was calculated by comparing the daily volume-to-capacity ratios for each key roadway segment. Currently, roadway segments within NAWSCL operate at LOS B or better.

Because the roadway segments providing access to NAWSCL currently operate at LOS A or LOS B (indicating near or at free-flow conditions), they have capacities to accommodate substantial increases in daily traffic volumes. The periodic addition of up to 140 vehicles per day during GTT events to the roadways would, therefore, be well within the capacity of these roadways, and potential impacts to traffic and circulation would not be significant.

Intersection Impacts
An intersection LOS analysis was conducted at eight key intersections identified in Section 3.12.4 for the Proposed Action and alternatives. The upper limit of acceptable LOS for intersections within NAWSCL is defined to be LOS C. Table 4.12-1 summarizes the results of the intersection LOS analysis under each alternative.

The increase in traffic (approximately 224 vehicles per day) associated with GTT and other military activities would be distributed throughout key intersections within NAWSCL based on the locations of specific activities. To provide the most conservative analysis, it was assumed that the 224 daily vehicle trips would occur during both the AM and PM peak hours. Table 4.12-1 shows the LOS results with the additional vehicles associated with the Proposed Action. Based on this, two intersections would continue to operate at an unacceptable LOS D or worse with implementation of the Proposed Action:

- Sandquist Road/Lauritsen Road (32.6 seconds of delay, LOS D in the AM peak hour); and
- East Inyokern Road/Bullard Road (47.8 seconds of delay, LOS E in the AM peak hour).

Since these intersections already operate at unacceptable LOS D or worse during existing conditions, the minor increase in the average delays per vehicle due to the Proposed Action would not result in significant impacts to intersection LOS.

Nonmilitary Uses
Under the Proposed Action, existing Native American, geothermal, research and education, and recreational activities would continue at NAWSCL. The DoN would continue to permit nonmilitary uses to the extent that these activities are compatible with military activities; do not create a safety, security, fiscal, or regulatory risk; and do not adversely impact natural and cultural resources at NAWSCL. Nonmilitary uses would not place additional demand on traffic and circulation; therefore, continued nonmilitary uses would not result in significant impacts to traffic and circulation.

Native American Use
Per the existing MOA between the tribes and NAWSCL, no more than 25 vehicles per day at any one time during Native American activities would occur at the Coso Hot Springs and Prayer Site.

Geothermal
Geothermal operations would continue at the current level under the Proposed Action. No additional traffic or traffic impacts would occur.

Table 4.12-1
Proposed Action (Alternative 1) and Baseline Alternative/Updated No Action Alternative (Alternative 2) Level of Service Summary

	Intersection	Control	Peak Hour	Proposed Action (Alternative 1)		Baseline Alternative/Updated No Action Alternative* (Alternative 2)	
				Delay[1]	LOS[2]	Delay[1]	LOS[2]
1	Sandquist Road/ Lauritsen Road	TWSC	AM	32.6	**D**	26.0	**D**
			MD	13.2	B	14.7	B
			PM	14.7	B	15.9	C
2	Nimitz Road/ Lauritsen Road	TWSC	AM	12.1	B	11.7	B
			MD	10.8	B	10.5	B
			PM	12.6	B	12.2	B
3	Knox Road/ Blandy Avenue	AWSC	AM	12.4	B	10.1	B
			MD	10.7	A	8.9	A
			PM	11.4	B	9.5	A
4	Blandy Avenue/ North Richmond Road	AWSC	AM	8.4	A	8.3	A
			MD	8.3	A	8.2	A
			PM	8.2	A	8.1	A
5	East Inyokern Road/Bullard Road	TWSC	AM	47.8	**E**	35.6	**E**
			MD	24.1	C	19.8	C
			PM	20.6	C	17.9	C
6	East Inyokern Road/Knox Road	RDBT	AM	3.1	A	4.1	A
			MD	3.1	A	4.4	A
			PM	3.1	A	4.2	A
7	E Inyokern Road/ Lauritsen Road	AWSC	AM	8.2	A	7.9	A
			MD	8.1	A	7.8	A
			PM	8.4	A	8.1	A
8	East Inyokern Road/North Richmond Road	AWSC	AM	8.4	A	8.4	A
			MD	8.7	A	8.6	A
			PM	9.8	A	9.5	A

Notes:
[1] Delays refer to the average control delay for the entire intersection, measured in seconds-per-vehicle, at all-way-stop-controlled intersections and roundabouts. At two-way-stop-controlled intersections, delay refers to the worst movement.
[2] LOS calculations based on 2000 Highway Capacity Manual methodology and performed using Traffix 8.0.
TWSC = two-way-stop-controlled unsignalized intersection;
AWSC = all-way-stop-controlled unsignalized intersection;
RDBT = roundabout;
MD = midday
Bold values indicate intersections operating at unacceptable LOS D, E, or F.
* Existing/Baseline LOS referenced from U.S. Navy 2006a, Table 3-2.

Research and Education

Research and education activities would periodically introduce small volumes of additional traffic to NAWSCL roadways. As such, a maximum of 4 vehicles would typically be associated with research activities and up to 20 vehicles would typically be associated with education activities. These events would typically be conducted during weekends, as they currently occur. No significant traffic impacts would occur.

Recreation

There are currently multiple existing recreational activities at NAWSCL that periodically increase traffic volumes. As the Proposed Action would not change these traffic volumes, approximately 16 vehicles per day would be expected for camping activities. Traffic generated by equestrian events typically would not exceed 20 vehicles at any one time, based on the highest level of traffic generated by current public activities at the Installation. ORVs only occasionally cross over NAWSCL lands. The maximum number of vehicles for a petroglyph tour would be 25 per event, consistent with current levels. The annual Audubon Society bird count would create the periodic addition of a maximum of 40 vehicles per day to access roadways. These ongoing recreational activities would not result in significant traffic impacts.

CLUMP Implementation

Implementation of the CLUMP would serve to facilitate improved planning and decision-making with regard to traffic and circulation and, thus, would represent a beneficial impact.

Cumulative Impacts

Under the Proposed Action, changes in Installation-related traffic loads would be minimal (as discussed above); therefore, the Proposed Action would not have the potential to have any regional traffic and circulation-related impacts.

Regional projects, such as the continued operation of the geothermal plant at Coso KGRA, the Deep Rose Geothermal Exploratory Project, Haiwee Geothermal Leasing Area, and the proposed zeolite mine are not expected to generate additional local or regional traffic. Consequently, these projects would not result in a significant increase to traffic in the area. Provisions of the City of Ridgecrest General Plan would support low intensity and open space land uses near NAWSCL to help support compatibility with the NAWSCL mission thus significant increases in traffic in the region are not anticipated.

Construction traffic associated with the Ridgecrest Solar Power Project would increase traffic volumes on U.S. 395, Brown Road, and China Lake Boulevard, the primary access routes to the site vicinity. Roadways are forecast to continue operating at their existing traffic flow conditions with no impacts to LOS during construction activity. However, the intersection of U.S. Highway 395 with South China Lake Boulevard and Brown Road potentially could be impacted during peak construction periods. To mitigate this, measures would be implemented to reduce the volume of workers arriving at the work site at the same time, such as temporarily staggered work shifts or contractor van pools. This would allow the westbound approach to operate at an LOS C or better during periods of peak construction activity. Traffic from the moderate size work force associated with around the clock plant operation would be minimal during operations. Acceptable access-related improvements and traffic management measures would also be designed and implemented to reduce potential traffic effects of the project (Solar Millennium 2009).

Other construction projects in the area, including on-installation construction projects (e.g., solar energy field and new school construction) and the Digital 395 Project, are expected to have a temporary increase in local and regional traffic. The temporary addition of construction traffic would not be expected to affect roadway operational conditions. Any roadway improvement projects in the region would result in a beneficial effect by increasing capacity of these roadways and improving traffic flow.

The accommodation of evolving mission needs (e.g., expanded EOD training area) would likely result in minor changes to traffic and circulation on NAWSCL. Based on the number of training events and types of activities, traffic generated from activities at these training areas is not anticipated to have appreciable traffic load and would not reduce the LOS of roadways and intersections.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative traffic impacts as it relates to other military land withdrawal actions in the region.

Given that changes in installation-related traffic loads would be minimal (as discussed above), the Proposed Action would not have the potential to have appreciable regional traffic and circulation-related impacts. Consequently, the Proposed Action would not result in cumulatively significant impacts to traffic and circulation in combination with other projects in the region.

4.12.2.2 Mitigation Measures and Impact Avoidance and Minimization Measures

No mitigation measures or impact avoidance and minimization measures are proposed.

Impacts Summary

Since the land withdrawal is a renewal of a previously approved land withdrawal, it would not have any direct or indirect impact on traffic and circulation at NAWSCL or in the region. Because the roadway segments providing access to NAWSCL currently operate at LOS A or LOS B, they have capacities to accommodate substantial increases in daily traffic volumes. The traffic resulting from the Proposed Action would be well within the capacity of these roadways, would not impact the LOS of the local roadways, and potential impacts to traffic and circulation would not be significant. Two intersections currently operate at an unacceptable LOS, Sandquist Road/Lauritsen Road and East Inyokern Road/Bullard Road. The minor increase in the average delays per vehicle due to the Proposed Action would not result in significant impacts to the LOS at these intersections.

Nonmilitary uses would not place additional demand on traffic and circulation; therefore, continued nonmilitary uses would not result in significant impacts. Implementation of the CLUMP would serve to facilitate improved planning and decision-making with regard to traffic and circulation and would represent a beneficial impact.

Regional planning projects are not expected to generate additional local or regional traffic. Construction projects in the area would have a temporary increase in local and regional traffic. Given that changes in installation-related traffic loads would be minimal, the Proposed Action would not have the potential to result in appreciable regional traffic and circulation-related impacts. The Proposed Action would not result in cumulatively significant impacts to traffic and circulation in combination with other potentially cumulative projects.

Because vehicle traffic associated with continuing activities at NAWSCL would not impact the LOS of the local roadway, the overall potential impact to traffic and circulation from implementation of the Proposed Action would not be significant (Table 4.12-2).

Table 4.12-2
Proposed Action (Alternative 1) – Summary of Traffic and Circulation Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Overall Summary	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.

4.12.3 Baseline Alternative/Updated No Action Alternative (Alternative 2)

The Baseline Alternative/Updated No Action Alternative includes Congressional renewal of the public land withdrawal for a 25-year term (approved as of December 2013) with continuation of military activities at current levels. Nonmilitary activities would continue according to current patterns of use. The 2005 CLUMP would be revised, as appropriate, and implemented to manage land use and environmental resources at NAWSCL.

4.12.3.1 Impacts

Land Withdrawal

The land withdrawals and reservations previously established by the CDPA on October 31, 1994 have been renewed. As a legislative action, the public land withdrawal renewal, in itself, would not have any direct or indirect impacts on traffic and circulation at NAWSCL or in the region. The analysis for potential impacts to traffic and circulation is presented in the subsections below.

Military Uses

Under the Baseline Alternative/Updated No Action Alternative, established military RDAT&E, training and support activities, and associated military land use would continue at existing levels and within areas

currently designated for such uses. Additional information regarding existing levels of military use is outlined in Table 2-2 in Chapter 2 of this EIS/LEIS.

GTT activities do not permanently affect traffic congestion levels on access roadways. However, there would continue to be a periodic increase in traffic volumes during the arrival and departure of troops.

Roadway Impacts
The Baseline Alternative/Updated No Action Alternative includes no changes in the current (existing) level of military and nonmilitary activities. As such, the existing roadway segment LOS identified in Table 3.12-2 of Section 3.12 would remain unchanged. Since the volume of roadway segments are currently well within the existing capacities of the circulation network, no significant impacts to traffic and circulation would occur under the Baseline Alternative/Updated No Action Alternative.

Intersection Impacts
The Baseline Alternative/Updated No Action Alternative includes no changes to the current (existing) level of military and nonmilitary activities. As such, the existing intersection LOS would remain unchanged. As shown in Table 4.12-1, two intersections would continue to operate at unacceptable LOS D or worse in the AM peak hour under existing/baseline conditions:

- Sandquist Road/Lauritsen Road (26.0 seconds of delay), LOS D in the AM peak hour; and
- East Inyokern Road/Bullard Road (35.6 seconds of delay), LOS E in the AM peak hour.

Although these intersections would operate at LOS D or worse under the Baseline Alternative/Updated No Action Alternative, this would not represent any change from what currently exists (no increase to existing traffic levels). As such, implementation of the Baseline Alternative/Updated No Action Alternative would not result in significant impacts to traffic and circulation.

Nonmilitary Uses
Under the Baseline Alternative/Updated No Action Alternative, existing Native American, geothermal, research and education, and recreational activities would continue at NAWSCL. The DoN would continue to permit nonmilitary uses to the extent that these activities would be compatible with military activities; would not create a safety, security, fiscal, or regulatory risk; and would not adversely impact natural and cultural resources at NAWSCL. Continuation of nonmilitary uses would not result in significant impacts to traffic and circulation.

Native American Use
Per the existing MOA between the tribes and NAWSCL, no more than 25 vehicles per day at any one time during Native American activities would occur at the Coso Hot Springs and Prayer Site.

Geothermal
Geothermal operations would continue at the current level under the Baseline Alternative/Updated No Action Alternative. No additional traffic or traffic impacts would occur.

Research and Education
Research and education activities would periodically introduce small volumes of additional traffic to NAWSCL roadways. As such, a maximum of 4 vehicles would typically be associated with research activities and up to 20 vehicles would typically be associated with education activities. These events would typically be conducted during weekends, as they currently are. No significant traffic impacts would occur.

Recreation

There are currently multiple existing recreational activities at NAWSCL, which periodically increase traffic volumes. As the Baseline Alternative/Updated No Action Alternative would not change these traffic volumes, approximately 16 vehicles per day would be expected for camping activities. Traffic generated by equestrian events typically would not exceed 20 vehicles at any one time, based on the highest level of traffic generated by current public activities at the Installation. ORVs only occasionally cross over NAWSCL lands. The maximum number of vehicles for a petroglyph tour would be 25 per event, consistent with current levels. The annual Audubon Society bird count would create the periodic addition of a maximum of 40 vehicles per day to access roadways. These ongoing recreational activities would not result in significant traffic impacts.

CLUMP Implementation

Implementation of the CLUMP would formalize and integrate the Installation's environmental planning and review processes. The environmental review process is applied to military and nonmilitary actions that occur on-installation and includes new actions or substantial changes to existing uses or activities. This review process would provide an analysis of actions with the potential to significantly increase on- or off-installation vehicular traffic. As such, traffic and circulation considerations would be integrated into the planning process, and implementation of the CLUMP would represent a beneficial impact.

Cumulative Impacts

Cumulative impacts anticipated under the Baseline Alternative/Updated No Action Alternative would be similar to the likely cumulative impacts associated with the Proposed Action, only to a somewhat lesser extent or intensity, insofar as NAWSCL's cumulative impacts would be expected to be somewhat lower under the Baseline Alternative/Updated No Action Alternative because this alternative would not include the potential increase in RDAT&E and training activities.

Under the Baseline Alternative/Updated No Action Alternative, no changes in installation-related traffic loads would occur; therefore, the Baseline Alternative/Updated No Action Alternative would not have the potential to have appreciable regional traffic and circulation-related impacts.

Regional projects, such as the continued operation of the geothermal plant at the Coso KGRA, the Deep Rose Geothermal Exploratory Project, Haiwee Geothermal Leasing Area, and the proposed zeolite mine are not expected to generate additional local or regional traffic. Consequently, these projects would not result in a significant increase to traffic in the area. Provisions of the City of Ridgecrest General Plan would support low intensity and open space land uses near NAWSCL to help support compatibility with the NAWSCL mission thus significant increases in traffic in the region are not anticipated.

Construction traffic associated with the Ridgecrest Solar Power Project would increase traffic volumes on U.S. 395, Brown Road, and China Lake Boulevard, the primary access routes to the site vicinity. Roadways are forecast to continue operating at their existing traffic flow conditions with no impacts to LOS during construction activity. However, the intersection of U.S. Highway 395 with South China Lake Boulevard and Brown Road potentially could be impacted during peak construction periods. To mitigate this, measures would be implemented to reduce the volume of workers arriving at the work site at the same time, such as temporarily staggered work shifts or contractor van pools. This would allow the westbound approach to operate at an LOS C or better during periods of peak construction activity. Traffic from the moderate size work force associated with around the clock plant operation would be minimal during operations. Acceptable access-related improvements and traffic management measures would also be designed and implemented to reduce potential traffic effects of the project (Solar Millennium 2009).

Construction projects in the area, including on-installation construction projects (e.g., solar energy field and new school construction) and the Digital 395 Project, are expected to have a temporary increase in local and regional traffic. The temporary addition of construction traffic would not be expected to affect roadway operational conditions. Any roadway improvement projects in the region would result in a beneficial effect by increasing capacity of these roadways and improving traffic flow.

The accommodation of evolving mission needs (e.g., expanded EOD training area) would likely result in minor changes to traffic and circulation on NAWSCL. Based on the number of training events and types of activities, traffic generated from activities at these training areas is not anticipated to have appreciable traffic load and would not reduce the LOS of roadways and intersections.

Public access to withdrawn lands is prohibited or restricted for reasons of safety and national security. Because reauthorization of the land withdrawal pursuant to the Proposed Action (see Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not result in cumulative traffic impacts as it relates to other military land withdrawal actions in the region.

The Baseline Alternative/Updated No Action Alternative, in combination with other projects in the region, would not result in any appreciable changes to traffic and circulation within the region. Therefore, implementation of the other projects in combination with the Baseline Alternative/Updated No Action Alternative would not have significant cumulative impacts to traffic and circulation.

4.12.3.2 Mitigation Measures and Impact Avoidance and Minimization Measures

No mitigation measures or impact avoidance and minimization measures are proposed.

Impacts Summary

Since the land withdrawal is a renewal of a previously approved land withdrawal, it would not have any direct or indirect impact on traffic and circulation at NAWSCL or in the region. The existing roadway segment LOS would remain unchanged and since the volume of roadway segments are currently well within the existing capacities of the circulation network, no significant impacts to traffic and circulation would occur under the Baseline Alternative/Updated No Action Alternative. Sandquist Road/Lauritsen Road and East Inyokern Road/Bullard Road intersections currently operate at an unacceptable LOS. The Baseline Alternative/Updated No Action Alternative would not affect that condition and would not result in significant impacts to traffic and circulation.

Nonmilitary uses would not place additional demand on traffic and circulation; therefore, continued nonmilitary uses would not result in significant impacts. Implementation of the CLUMP would serve to facilitate improved planning and decision-making with regard to traffic and circulation and would represent a beneficial impact.

Regional planning projects are not expected to generate additional local or regional traffic. Construction projects in the area would have a temporary increase in local and regional traffic. Given that the Baseline Alternative/Updated No Action Alternative would not result in any changes in installation-related traffic loads, this alternative would not result in cumulatively significant impacts to traffic and circulation in combination with other potentially cumulative projects.

Because vehicle traffic associated with continuing activities at NAWSCL would not impact the LOS of the local roadway, the overall potential impact to traffic and circulation from implementation of the Baseline Alternative/Updated No Action Alternative would not be significant (Table 4.12-3).

4.12.4 No Action Alternative (Alternative 3)

Because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of "no action" conditions at NAWSCL; therefore, the discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed (please see discussion in Section 2.3.3). For the purposes of the Final EIS/LEIS, the Baseline Alternative/Updated No Action Alternative is considered to effectively represent "no action" conditions or status quo (see Section 4.12.3).

Table 4.12-3
Baseline Alternative/Updated No Action Alternative (Alternative 2) – Summary of Traffic and Circulation Impacts and Mitigation Measures and Impact Avoidance and Minimization Measures

Impacts	Mitigation Measures/Impact Avoidance and Minimization Measures
Land Withdrawal	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Military Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Nonmilitary Uses	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
CLUMP Implementation	
CLUMP would represent a beneficial impact.	No mitigation measures. No impact avoidance and minimization measures.
Cumulative Impacts	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.
Overall Summary	
No significant impacts.	No mitigation measures. No impact avoidance and minimization measures.

CHAPTER 5.0
OTHER NEPA CONSIDERATIONS

5.1 IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA requires that environmental analysis include identification of "any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented." Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced in a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., the extinction of a threatened or endangered species or the disturbance of a cultural site).

The continuation of activities at NAWSCL as described in this EIS/LEIS would, for most resources, neither irreversibly nor irretrievably commit resources. As in the past, activities that have the potential to produce ground disturbance also have the potential to impact water resources, air quality, biological resources, and cultural resources. However, management policies and practices in place and proposed to continue are designed to minimize potential impacts to these resources.

Construction and maintenance of targets and other facilities on NAWSCL would require the consumption of limited quantities of aggregate, steel, concrete, petroleum, oil, and lubricants. The commitment of these resources would apply under all three alternatives.

Use of munitions during RDAT&E and training activities would involve the commitment of certain quantities of resources; however, none of these resources are considered rare and their long-term commitment would not have a substantial effect on their future availability.

All alternatives would involve fuel use by aircraft and surface vehicles. RDAT&E and training activities would continue under all alternatives. Changing world situations and shifts in the strategies for national defense defined by the President and Congress dictate the training activities and support needs for all armed services. In the future, should such changes and shifts alter training requirements, the DoN would evaluate possible options to fulfill these requirements. Such changes could result in the removal or reduction of a range. If a range were no longer needed in the future for RDAT&E or training, the DoN would relinquish the withdrawn land from NAWSCL to BLM. The FLPMA describes the process for such relinquishment, including any appropriate site restoration.

5.2 RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

The majority of the activities addressed in this EIS/LEIS would be categorized as long term. For example, although the use of target areas for individual test or training events may be of short duration, the target areas would continue to receive repeated use for the foreseeable future under the Propose Action (Alternative 1) and Baseline Alternative/Updated No Action Alternative (Alternative 2). However, these uses would not adversely affect the long-term productivity of environmental resources at NAWSCL. The Proposed Action (Alternative 1) and Baseline Alternative/Updated No Action Alternative (Alternative 2) would be consistent with the DoN's long-term goals of accommodating current and future technologies, and the land and resources management directives contained in the FLPMA.

5.3 UNAVOIDABLE ADVERSE EFFECTS

NEPA requires a discussion of any adverse environmental effects that cannot be avoided (40 CFR § 1502.16 [1997]). The Proposed Action (Alternative 1) and Baseline Alternative/Updated No Action Alternative (Alternative 2) would result in unavoidable adverse noise effects and land use compatibility impacts. All other potential environmental impacts associated with the Proposed Action and alternatives would be mitigable to less-than-significant levels with implementation of the procedures described in this document.

The 65-dBA CNEL contour extends approximately 4 miles (6.4 kilometers) south of the NAWSCL boundary into the communities of China Lake Acres and Ridgecrest. Both communities are currently exposed to noise levels in the 65- to 70-dBA range. Off-installation effects from ongoing aircraft flight events exceed noise compatibility thresholds at certain noise-sensitive receptors in the communities of China Lake Acres and Ridgecrest and associated noise impacts are considered significant. This would also result in significant land use compatibility impacts.

Because reauthorization of the land withdrawal pursuant to the Proposed Action (see discussion in Section 2.3.3) involved land that was already withdrawn from public use, the land withdrawal renewal would not in itself have any direct or indirect impact on air emissions at NAWSCL, or affect the attainment status of criteria pollutants within the air basins; however, the various activities that would occur under the Proposed Action would generate emissions.

5.4 ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL OF THE PROPOSED ACTION AND ALTERNATIVES

Energy required to successfully implement the Proposed Action would include fossil fuels and electricity needed to power aircraft, missiles, targets, vehicles, and equipment. Fuels for DoN and contractor vehicles are currently available and are in adequate supply from DoN-owned sources or from area commercial distributors. Required electricity demands would be supplied by the existing electrical service at NAWSCL or by generators at some of the Installation's remote locations.

Direct energy requirements of the Proposed Action are limited to those necessary to operate established facilities, vehicles, and equipment. No superfluous use of energy related to the Proposed Action has been identified, and proposed energy uses have been minimized to the maximum extent possible without compromising the integrity of testing, training, and facility management activities. Therefore, no additional conservation measures related to energy consumption by the Proposed Action have been identified.

CHAPTER 6.0
REFERENCES

Adams, M.C., J.N. Moore, S. Bjornstad, and D.L. Norman. 2000. *Geologic History of the Coso Geothermal System, Proceedings of the World Geothermal Congress*, Kyushu, Japan, 28 May–10 June 2000.

Adams, M.C. 1994-2005. *Geochemical Monitoring of the Coso Geothermal System*, USN Contracts N68936-93-C-0036, N68936-97-C-0234, N68936-02-C-0206.

Adams, M.C. 1995. *Vapor, Liquid, and Two-Phase Tracers for Geothermal Systems, Proceedings of the World Geothermal Congress*, Florence, Italy, 18–31 May.

AECOM. 2010. *Evaluation of National Register of Historic Places Eligibility for Nine Buildings at Naval Air Weapons Station China Lake, China Lake, California*. Prepared for U.S. Department of the Navy Naval Facilities Engineering Command Southwest, San Diego, CA.

American National Standards Institute (ANSI). 2007. *American National Standard for Safe Use of Lasers*, ANSI Z136.1, March.

American National Standards Institute (ANSI)/Institute of Electrical & Electronics Engineers (IEEE). 1992. C95.1-1992, *Safety Levels with Respect to Human Exposure to Radio Frequency. Electromagnetic Fields, 3 kHz to 300 GHz*.

Applied Biological Consulting. 2005. Grid Stations 304 and 307 Survey Results. 26 May.

Archaeological Research Services and Far Western Anthropological Research Group. 1999. *A Cultural Resources Inventory of Nine Springs in the North Range Complex, Naval Air Weapons Station, China Lake, Inyo County, California*. Report on file, NAWSCL.

ASM Affiliates (ASM). 2008. *An Archaeological Evaluation of Fort Coso (CA-INY-5754H) NAWS, China Lake Inyo County, CA*. Report on file at Naval Air Weapons Station, China Lake, CA.

Austin, C.F., and W.F. Durbin. 1985. *Coso: Example of a Complex Geothermal Reservoir*, NWC TP-6658.

Awbrey, F., and D. Hunsaker II. 2000. *The Effects of Helicopter Operations on the Biological Responses of the Coastal California Gnatcatcher (Polioptila californica californica*). Contract Number N68711-94-LT-4064. Prepared for MCAS Miramar Environmental Management Department and Southwest Division, Naval Facilities Engineering Command, San Diego, CA.

Bagley, M. 1986. *Sensitive Plant Species of the Naval Weapons Center, China Lake and the Surrounding Regions; Inyo, Kern, and San Bernardino Counties, California*. Prepared for NWC Environmental Branch with Ecological Research Services.

Baker, Cindy L., and Mary Maniery. 2010. *Historic Roads and Trails Historic Context Study Naval Air Weapons Station, China Lake, Kern, Inyo and San Bernardino Counties, California*. Prepared by PAR Environmental Services. Sacramento, CA. Document on file with NAWSCL.

Basgall, M.E. 2000. The Structure of Archaeological Landscapes in the North-Central Mojave Desert. In *Archaeological Passages: A Volume in Honor of Claude Warren*, edited by J.S. Schneider, R.M. Yohe II, and J.K. Gardner, pp. 123–138. Western Center for Archaeology and Paleontology Publications in Archaeology 1.

Baskerville, M. 2009. *EOD Expansion Project*. Report on file at Naval Air Weapons Station, China Lake, CA.

Baskerville, M. 2010. *Seabee Training 1 Facility*. Report on file at Naval Air Weapons Station, China Lake, CA.

Beatley**,** J.C. 1976. *Vascular Plants of the Nevada Test Site and Central Southern Nevada: Ecologic and Geographic Distributions*, Energy Research and Development Administration, Technical Information Center. Available from National Technical Information Service, Springfield, VA.

Beatley, J.C. 1979. *Shrub and Tree Data for Plant Associations Across the Mojave/Great Basin Desert Transition of the Nevada Test Site, 1963–1975*. Springfield, VA, National Technical Information Service, DOE/EV/2307-15 U-48, 52 p.

Berenbrock, C., and P. Martin. 1991. *The Ground-Water Flow System in Indian Wells Valley, Kern, Inyo, and San Bernardino Counties, California*. US Geological Survey (USGS) Water Resources Investigations Report 89-4191.

Bishop, Dwight E., Thomas C. Dunderdale, Richard D. Horonjeff, and John F. Mills. 1977. AMRL-TR-76-116. Further Sensitivity Studies of Community-Aircraft Noise Exposure (NOISEMAP) Prediction Procedures. April.

Blue, D., and D.W. Moore. 1995. *Checklist of the Birds of Indian Wells Valley,* Kerncrest Chapter, National Audubon Society, Ridgecrest, CA.

Braid, R.B. 1992. Incorporation of Public Participation in Environmental Analyses of Low-Altitude Flying Operations. *The Environmental Professional* 14:60–69.

Brooks, C.R., W.M. Clements, J.A. Kantner, and G.Y. Poirier. 1979. *A Land Use History of Coso Hot Springs, Inyo County, California*. Iroquois Research Institute, Fairfax, VA.

Brown. 1982. Biotic Communities of the American Southwest United States and Mexico. *Desert Plants* 4:3–342. University of Arizona Press.

Bureau of Land Management (BLM). 2008*. BLM Instructional Memorandum 2008-009*. United States Department of the Interior, Bureau of Land Management. Washington, D.C. October 15.

BLM. 2010. Memorandum of Agreement. Pages 4.4-19 and 4.4-34.

BLM. 2012. *Haiwee Geothermal Leasing Area, Draft Environmental Impacts Statement and Draft Proposed Amendment to the California Desert Conservation Area Plan*. April.

BLM. 2013. *Final China Lake NAWS Military Withdrawal Minerals Potential Report*. January.

Bureau of Reclamation. 1993. *Indian Wells Valley Groundwater Project, Summary Report*, U.S. Department of Interior, Bureau of Reclamation, Lower Colorado Region, December.

California Air Resources Board (CARB). 2007. EMFAC 2007 (v2.3) Emission Factors (On-Road).

CARB. 2010. National and California Ambient Air Quality Standards. 17 November. Available at http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.

CARB. 2011. *Air Quality Monitoring Data*. Available at www.arb.ca.gov/aqd/aqdpage.htm.

California Department of Fish and Game (CDFG). 2011. *California Natural Diversity Data Base*, Natural Heritage Division. September.

California Department of Transportation (Caltrans). 2009. Caltrans Traffic and Vehicle Data Systems Annual Average Daily Traffic (AADT) database.

California Environmental Protection Agency (CalEPA). 2006. Climate Action Team Report to Governor Schwarzenegger and the California Legislature, March. Available at http://www.climatechange.ca.gov/climate_action_team/reports/index.html.

California Labor Market Information Division, Employment Development Department (EDD). 2011. *Monthly Labor Force Data for Counties, May 2011 – Preliminary*. State of California, Labor Market Information Division, Employment Development Department Report 400C, 17 June. Accessed 18 July 2011.

California Native Plant Society (CNPS). 2012. Inventory of Rare and Endangered Plants (online edition, v7). California Native Plant Society. Sacramento, CA. Available at http://www.cnps.org/inventory.

Chambers Group. 2011. *Final Joint NEPA Environmental Assessment and CEQA Initial Study/Mitigated Negative Declaration for the Digital 395 Middle Mile Project, San Bernardino, Kern, Inyo, and Mono Counties in California, Douglas, Carson City, and Washoe Counties in Nevada*. November.

City of Ridgecrest. 2009. *City of Ridgecrest General Plan*. December.

City of Ridgecrest. 2011. Police Department Home. City of Ridgecrest Police Department. Available at http://ci.ridgecrest.ca.us/police.aspx?id=190. Accessed 18 July 2011.

Cleland, James H. 1991. *Sugarloaf Archaeological District Cultural Resource Management Plan. Prepared by Dames and Moore, San Diego*. Prepared for the Department of the Navy, Geothermal Program Office, Naval Weapons Center, China Lake, CA.

Clewlow, William C., and Michael R. Walsh. 1996. *Final Cultural Resources Survey and Inventory Report on Archaeological Survey at Electronic Combat Range Part 1: Mojave B North Fiber Route (MBNFR) from Central Site Complex to Wingate Pass*. Submitted to NAVAIRWPNSTA, China Lake by Ancient Enterprises, Santa Monica.

Consortium of California Herbaria. 2011. Available at ucjeps.berkeley.edu/consortium/. 29 September; 16:21:01.

Coombs, G.B., and R.S. Greenwood. 1982. *A Cultural Resources Overview and Inventory Plan for the Naval Weapons Center, China Lake*. Report on file at Naval Weapons Center, China Lake, CA.

Cord, B., and J.R. Jehl, Jr. 1979. Distribution, Biology, and Status of a Relict Population of Brown Towhee. *Western Birds* 10:131–156.

Council on Environmental Quality (CEQ). 1978. *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*.

CEQ. 2010. *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gases*. February.

Curry, William. 2004. *Analysis of Causes of Hydrologic Changes at Coso Hot Springs*. Prepared for Eastern California Paiute and Shoshone Tribes.

Davis. E.L. 1974. Paleo-Indian Land Use Patterns at China Lake, California. *Pacific Coast Archaeological Society Quarterly* 10:2.

Davis, E.L., and C. Panlaqui (eds.). 1978. *The Ancient Californians: Rancholabrean Hunters of the Mojave Lakes Country.* Los Angeles County Museum of Natural History Science Series 29.

Deis, R. 2003. *Cultural Resources Survey of Target Buffer Areas, South Range Naval Air Weapons Station, China Lake, California*. Prepared by EDAW (now AECOM). Submitted to Southwest Division Naval Facilities Engineering Command.

Deis, R.W., and J.H. Cleland. 2004. *Cultural Resources Evaluations and Survey, South Range Naval Air Weapons Station, China Lake, California*. Prepared by EDAW. Prepared for Southwest Division, Naval Facilities Engineering Command, San Diego.

Deis, R., and J. Underwood. 2004. *Cultural Resources Survey and Evaluation, South Range and Mainsite Management Unit, Naval Air Weapons Station*. Prepared by EDAW. Submitted to Southwest Division Naval Facilities Engineering Command.

Dillon, B.D. 2002. California Paleoindians: Lack of Evidence, or Evidence of Lack? In *Essays in California Archaeology: A Memorial to Franklin Fenega*, edited by W.J. Wallace and F.A. Riddell, pp. 110–128. Contributions of the University of California Archaeological Research Facility no. 60.

Department of Defense (DoD). 2007. *Use of International Airspace by U.S. Military Aircraft and for Missile/Projectile Firings*, DoD Directive 4540.01, March.

DoD. 2009a. *Protecting Personnel from Electromagnetic Fields*, DoD Instruction 6055.11, August.

DoD. 2009b. *Department of Defense Handbook: Range Laser Safety*, MIL-HDBK-828B, December.

Department of the Interior (DoI), Bureau of Land Management (BLM). 1995. *The California Desert Conservation Area Plan*.

Desert Mountain RC&D Council. 2011. *Mohave Tui Chub Management Plan*.

Donaldson, M.W. 2009. Construction of 1 Seven Water Wells at Naval Air Weapons Station, China Lake. Letter from SHPO to J. O'Gara, Environmental Planning and Management Department, Naval Air Weapons Station, China Lake.

Driver, Harold E. 1937. Culture Element Distributions, VI: Southern Sierra Nevada. *University of California Anthropological Records* 1(2):530–154. Berkeley.

Dundordale, Tom C., Richard D. Horonjeff, and John F. Mills. 1976. Sensitivity Studies of Community-Aircraft Noise Exposure (NOISEMAP) Prediction Procedure. March.

Duran, C., and L. Johnson. 2010. *DU remediation Cultural Resources Survey Report NAWS China Lake, Kern and San Bernardino Counties, California*. Document on file at NAWSCL.

Dutcher, L.C., and W.R. Moyle, Jr. 1973. *Geologic and Hydrologic Features of Indian Wells Valley, California*. Geological Survey Water Supply Paper.

EDD. See California Labor Market Information Division, Employment Development Department.

Eerkins, M., and B. Logren. 1989. *Recent Changes in Surficial Hydrothermal Manifestations of Coso Hot Springs, Inyo County, California*, USN Contract N68936-89-C-2604.

Eerkins, J.W., and J.S. Rosenthal. 2004. Are Obsidian Sources Meaningful Units of Analysis? Temporal and Spatial Patterning of Subsources in the Coso Volcanic Field, Southeastern California. *Journal of Archaeological Science* 32:21–29.

Epsilon Systems Solutions, Inc. (Epsilon). 2010. *Armitage Field Historic Building and Inventory Draft Report, NAWS China Lake, California*. Document on file at NAWSCL.

Epsilon. 2011a. Tortoise Survey Report, Shrike Target Area, NAWS China Lake, California.

Epsilon. 2011b. *Final Inventory and Evaluation for Buildings, Structures, and Objects at Mainsite, NAWS China Lake, California*. Document on file at NAWSCL.

Federal Aviation Administration (FAA). 2010. *Emissions and Dispersion Modeling System (EDMS) User's Manual*, FAA-AEE=07-01 (Rev. 5 -11/15/10), Federal Aviation Administration Office of Environment and Energy, Washington, DC, November.

Federal Communications Commission (FCC). 1999. Office of Engineering and Technology, Radiofrequency Safety, Specific Absorption Rates.

Federal Highway Administration. 2010. *Highway Traffic Noise and Abatement Guidance*. June.

Federal Interagency Committee on Aviation Noise. 1992. Graphic of Common Sound Levels.

Feldmeth, C.R., D. Moore, and T.W. Bilhorn. 1989. *Field Monitoring of Mojave Tui Chub Habitats at China Lake Naval Weapons Center During the City of Ridgecrest's Wastewater Treatment Facility Groundwater Dewatering Program*, Natural Resources Center, Claremont McKenna College, February 7.

Fournier, R.O., and J.M. Thompson. 1980. *The Recharge Area for the Coso, California, Geothermal System in Thermal and Non-Thermal Waters in the Region*, U.S. Geological Survey Open File Report 80-454.

Garfinkel, Alan P. 2006. Paradigm Shifts, Rock Art Theory, and the Coso Sheep Cult of Eastern California. *North American Archaeologist* 27(3):203–244.

Garfinkel, Alan P., and Harold Williams. 2011. *The Handbook of the Kawaiisu: A Sourcebook and Guide to Primary Resources on the Native Peoples of the Far Southern Sierra Nevada, Tehachapi Mountains, and Southwestern Great Basin*. Wa-hi San'avi Publications.

Geologica, 2006 – Present, Geochemical Monitoring of the Coso Geothermal System, USN Contract N68936-07-C-0073.

Geologica. 2011. *Coso Hot Springs Monitoring Report, 2009 – 2010*. Prepared for the United States Navy, Naval Air Weapons Station, Geothermal Program Office, China Lake, California. August.

Gerstley, James M. no date. *Death Valley 49ers*.

Giambastiani, M.A., B.E. Comeau, and O.N. Patsch. 2011. *An Archaeological Inventory of Historical and Contemporary Roads at Naval Air Weapons Station, China Lake, Inyo, Kern, and San Bernardino Counties, California*. Document on file, NAWSCL.

Gilreath, A.J., and W.R. Hildebrandt. 1997. *Prehistoric Use of the Coso Volcanic Field*. Contributions of the University of California Archaeological Research Facility No. 56.

Gilreath, Amy. 1999. The Archaeology and Petroglyphs of the Coso Rock Art Landmark. In *American Indian Rock Art*, Volume 25, edited by S. Freers, pp. 33-44. American Rock Art Research Association, Tucson, AZ.

Gilreath, A.J. 2007. *Assessment of Fire Effects in the Coso Rock Art National Historic Landmark, Naval Air Weapons Station China Lake, Inyo County, California*. Report on file, NAWSCL.

Glen Lukos Associates. 1998. Letter Report, Preliminary Findings of U.S. Army Corp of Engineers Jurisdiction, NAWS China Lake, 23 June.

Gorenson, C. 1994. Coso Hot Springs Hydrology. Letter report to the Eastern Sierran tribes.

Grant, Campbell, James W. Baird, and J. Kenneth Pringle. 1968. Rock Drawings of the Coso Range, Inyo County, California: An Ancient Sheep-Hunting Cult Pictured in Desert Rock Carvings. *Maturango Museum Publication* 4, China Lake, CA.

Harris, Cyril M. (ed.). 1979. *Handbook of Noise Control*. New York: McGraw-Hill.

Hickman, James C. (ed.). 1993. *The Jepson Manual*. Berkeley, CA: University of California Press.

Hildebrandt, W., and D. Jones. 1997. *The JSOW Archaeological Survey, Site Evaluation, and Data Recovery Project, Naval Air Weapons Station, China Lake, Inyo County, California*, volume 1. Prepared by Far Western Anthropological Research Group, Inc., Davis. Document on file at NAWSCL.

Hildebrandt, W.R., and A. Ruby. 1999. *Archaeological Survey of the Coso Target Range: Evidence for Prehistoric and Early Historic Use of the Pinyon Zone at Naval Air Weapons Station, China Lake, Inyo County, CA*, Vols. I and II, December 1999, Far Western Anthropological Research Group.

Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Unpublished report. California State Department of Fish and Game, Natural Heritage Division.

Houghton, B.D. 1984. Groundwater Geochemistry of the Indian Wells Valley: M.S. thesis, California State University, Bakersfield.

Hunsaker II, D. and J. Rice. 2006. *Final Report: The Effects of Helicopter Noise and Habitat Quality on Least Bell's Vireo Productivity at Marine Corps Air Station and Marine Corps Base Camp Pendleton*.

ICNIRP. 1998. ICNIRP *Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic and Electromagnetic Fields (Up to 300 GHz)*. International Commission on Non-Ionizing Radiation Protection, Oberschleissheim, Germany.

Indian Wells Valley Cooperative Groundwater Technical Advisory Committee (IWVCGTAC). 2008. *Installation and Implementation of a Comprehensive Groundwater Monitoring Program for the Indian Wells Valley, California*. Prepared by Indian Wells Valley Cooperative Groundwater Technical Advisory Committee and Geochemical Technologies.

Innovative Technical Solutions, Inc. (ITSI). 2007. *Hydrologic Analysis of the Coso Geothermal System: Technical Summary* (contract N68711-05-P-0049). Prepared for the Geothermal Program Office, Naval Air Weapons Station, China Lake, California. April 26.

Institute of Electrical & Electronics Engineers (IEEE). 1991. C95.3-1991, *Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields – RF and Microwave*.

Institute of Transportation Engineers. 2009. *Traffic Engineering Handbook*, 6th Edition, March.

Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis.* Contribution of Working Group I to the Fourth Assessment Report of the IPCC. Geneva, Switzerland. Available at http://www.ipcc.ch/ipccreports/ar4-wg1.htm.

Inyo County. 2001. *General Plan Summary for the Inyo County General Plan*. March.

Jennings, C.W., J.L. Burnett, and B.W. Troxel. 1962. Geologic map of California: Trona sheet. California Division of Mines and Geology, scale 1:250,000.

JRP Historical Consulting Services (JRP).1996. *Historic Context for Evaluating the National Register Eligibility of World War II era and Cold War-era Buildings and Structures, Naval Air Weapons Station (NAWS) China Lake, California*. Prepared for Engineering Field Activity, West, Naval Facilities Engineering Command, San Bruno.

JRP. 1997. *Inventory and Evaluation of National Register Eligibility for Buildings and Structures: Main Site, China Lake Propulsion Laboratories (CLPL), Salt Wells Propulsion Laboratories (SWPL), Armitage Field*. Report on file, NAWSCL.

JRP. 2000. *Historic Resources Report: American Magnesium Company's Epsom Salts Monorail Naval Air Weapons Station, China Lake, San Bernardino County, California*. Submitted to Department of the Navy, Naval Facilities Engineering Command, San Diego.

Justis, Ruth. 2009. Changes at Drummond Medical Clinic. *The Daily Independent*, 10 January 2009. Available at http://www.ridgecrestca.com/news/x497785134/ Changes-at-Drummond-Medical-Clinic. Accessed 19 July 2011.

Kelly, Isabel T., and Catherine S. Fowler. 1986. Southern Paiute. In *Great Basin*, edited by Warren L. D'Azevedo, pp. 368–397. Handbook of North American Indians, Vol. 11, William C. Sturtevant, general editor. Smithsonian Institution, Washington, DC.

Kern County. 2009. *Kern County General Plan*. June.

Kern County Council of Governments (COG). 2008. *Regional Transportation Improvement Plan,* Bakersfield, CA.

Kiva Biological Consulting and Epsilon Systems Solutions. 2004. *NAWS/China Lake Desert Tortoise Survey Technical Report*. Prepared for NAWS, China Lake.

Kiva Biological Consulting. 1991. *Estimated Distribution and Density of the Desert Tortoise at China Lake, NWC*.

Krieger & Stewart. 2010. *Indian Wells Valley Water District 2010 Urban Water Management Plan*. May.

Kroeber, Alfred L. 1925. *Handbook of the Indians of California*. Bureau of American Ethnology Bulletin 78. Government Printing Office, Washington, DC.

LaBerteaux, D.L. 1989. Morphology, Foraging Behavior, and Nesting Biology of the Inyo California Towhee (*Pipilo crissalis eremophilus*). M.S. thesis. Northern Arizona Univ., Flagstaff, AZ.

LaBerteaux, D.L. 1994. *A Proposed Management Plan for the Inyo California Towhee (Pipilo crissalis eremophilus) on Naval Air Weapons Station, China Lake, California*. Naval Air Weapons Station contract N60530-90-D-0071 (OO18), Commanding Officer (CO8081). 1 Administration Circle, China Lake, CA 93555-6001.

LaBerteaux, D.L., and B.H. Garlinger. 1998. *Inyo California Towhee (Pipilo crissalis eremophilus) Census in the Argus and Coso Mountain Ranges, Inyo County, California*. Prepared for Commanding

Officer (83E000D), Naval Air Weapons Station, China Lake, CA. Contract N62474-98-M-3113). 94 pp. + appendices.

Lahontan Regional Water Quality Control Board (Lahontan RWQCB). 1994. *Water Quality Control Plan for the Lahontan Region, North and South Basins*. October.

La Pierre, K. 2010. *Seabee*. Document on file with NAWSCL.

Leach-Palm, L. 2001. *Archaeological Survey of 500 Acres of the Charlie Airfield, at the Naval Air Weapons Station, South Range, China Lake, San Bernardino County, California*. Report on file, NAWSCL.

Lee, R.A. 1982. AFAMRL-TR-82-12. Field Studies of the AF Procedures (NOISECHECK) for measuring Community Noise Exposure from Aircraft Operations. March.

Levine, S. 2009. *The Active Denial System: A Revolutionary, Non-Lethal Weapon for Today's Battlefield*. Center for Technology and National Security Policy, National Defense University, Washington, D.C. June.

Liljeblad, S., and C. Fowler. 1986. Owens Valley Paiute. In *Great Basin*, edited by W. D'Azevedo, pp. 412–434. Handbook of North American Indians, Vol. 11, William C. Sturtevant, general editor. Smithsonian Institution, Washington, DC.

Lobeck, A.K. 1975. *Physiographic Diagram of North America*. The Geographical Press, Hammond, Maplewood, NJ.

Lundberg, W.R. 1991. AL-TR-1991-007 Analysis of Measured Environmental Noise Levels: An Assessment of the Effects of Airbase Operational Model Variables on Predicted Noise Exposure Levels. Final Report for Field Measurement July 79 – March 80 and Analysis June 89 – December 90. June.

McDonald, M., and J. Flenniken. 1996. *Data Recovery Excavation of Twelve Sites in the Proposed Cactus Flat Explosives Safety Test Arena, Naval Air Weapons Station, China Lake, Inyo County, California*. Prepared by Brian F. Mooney Associates, San Diego, California. Prepared for Environmental Project Office, Naval Air Weapons Station, China Lake, California.

McLeod, S. 2010. Paleontological Specimen and Locality Data. Manuscript on file, Natural History Museum of Los Angeles County Department of Vertebrate Paleontology, Los Angeles, California.

Mikesell, Stephen D. 1997. *Inventory and Evaluation of National Register Eligibility for Buildings and Structures: Mainsite, China Lake Propulsion Laboratory (CLPL), Salt Wells Propulsion Laboratory (SWPL), Armitage Field, Naval Air Weapons Station (NAWS), China Lake, California*. Prepared by JRP Historical Consulting Services, Davis, CA. Document on file with NAWSCL.

Mikesell, Stephen D. 1999. *High-Speed Test Tracks at the NAWS, China Lake: Historic Context and Evaluation of K-2, LARK, B-4, K-3, G-4, and SNORT Tracks*. Prepared by JRP Historical Consulting Services, Davis, CA. Document on file with NAWSCL.

Mikesell, Stephen D. 2000. *Historic Resources Report: American Magnesium Company's Epsom Salts Monorail Naval Air Weapons Station, China Lake, San Bernardino County, California*. Submitted to Department of the Navy, Naval Facilities Engineering Command, San Diego.

Morgan, C. 2008. *East Darwin Infill Addendum to: A Section 110 Cultural Resources Inventory and Overview of 4,950 Acres West of the Argus Range and East of Darwin Wash, Naval Air Weapons Station China Lake, Inyo County, California*. Report on file, Naval Air Weapons Station, China Lake, CA.

Moyle, W.R. 1977. *Summary of Basic Hydrologic Data Collected at Coso Hot Springs, Inyo County, California*, USGS Open File Report 77-485.

Munz, P. 1974. *A Flora of Southern California*. University of California Press: Berkeley, CA.

National Park Service (NPS). 1989. *The Section 110 Guidelines: Annotated Guidelines for Federal Agency Responsibilities under Section 110 of the National Historic Preservation Act.* ACHP, Washington, D.C.

NPS. 1990. *How to Apply the National Register Criteria for Evaluation*, National Register Bulletin #15, National Park Service, Interagency Resources Division, Washington, DC, revised 1997.

Natural Resources Conservation Service (NRCS). 1991. *Soil Survey of Portion of the China Lake Weapons Center, California: Including Parts of Inyo, Kern, and San Bernardino Counties*, USDA-Soil Conservation Service, 344 pages.

NRCS. 1998. State Soil Geographic (STATSGO) Database, data use information, Miscellaneous Publication No. 1492. Naval Air Weapons Station, China Lake, CA.

Naval Air Systems Command (NAVAIR). 1999. CV NATOPS Manual, October, 21.

Naval Air Warfare Center (NAWC). 1979. Memorandum of Agreement between the Commander Naval Weapons Center on behalf of the U.S. Government and the Coso Ad Hoc Committee, and the Owens Valley Paiute-Shoshone Band of Indians and Certain Indian People in the Kern Valley Indian Community Concerning the Area known as Coso Hot Springs, Naval Weapons Center, China Lake, CA.

NAWC. 1995a. NAWCWD memorandum 628052B000D(C32)/038, 1 September.

NAWC. 1995b. NAWC Weapons Instruction, NAWCWPNSINST 5090.1 833200E/823E00D, 27 September.

NAWC. 1999. Pacific Ranges and Facilities Department Range Safety Manual (RSF), Instruction 5100.2A, September.

Naval Air Warfare Center Weapons Division (NAWCWD). 2010. Ranges Department China Lake Ranges Road Usage Direction, May 2010.

NAWCWD. 2011. Naval Air Warfare Center Weapons Division Operational Requirements Document, October.

Naval Air Weapons Station China Lake. 2011. *Range Management Plan*, NAWSINST 8020.15.

Naval Facilities Engineering Command Southwest (NAVFAC SW). 2006. Department of the Navy Southwest – Renewable Energy and Distributed Generation Projects.

Naval Sea Systems Command (NAVSEA). 2008a. *Ammunition and Explosives Ashore Safety Regulations for Handling, Storing, Production, Renovation, and Shipping,* NAVSEA OP 5 Volume 1, Seventh Revision, Change 7 Naval Sea Systems Command. July.

NAVSEA. 2008b. *Electromagnetic Radiation Hazards*, NAVSEA OP3565/NAVAIR 16-1-529. September.

Parker, P.L., and T.F. King. 1990. *Guidelines for Evaluating and Documenting Traditional Cultural Properties*, National Register Bulletin 38. U.S. Department of the Interior, National Park Service, Interagency Resources Division, Washington, D.C.

Prater, Larry. 1976. *Noise Abatement Program for Explosive Ordnance at NSWC/DL*. September.

Pratt and Pierce. 1995. *Butterflies of the Mojave Desert Military Bases: China Lake Naval Air Weapons Center, Fort Irwin Military Reservation, and Edwards Air Force Base*. Entomology Department, University of California at Riverside.

Quillen, D.K. 1979. *Cultural Resources Inventory of the Proposed U.S. Air Force Superior Valley Range, Mojave Desert, California*. Report on file, NAWSCL.

Randl, C. 2001. *Protecting a Historic Structure during Adjacent Construction*. National Park Service Technical Preservation Services, Technical Notes No. 3.

Range Commanders Council (RCC). 2010. *Common Risk Criteria Standards for National Test Ranges*, RCC Standard 321-10, RCC Range Safety Group Risk Committee, U.S. Army White Sands Missile Range, New Mexico. December.

Rantz, S.E. 1967. Mean Annual Precipitation in the California Region, USGS map.

Rentz, Peter E. and Harry Seidman. 1980. Development of Noisecheck Technology for Measuring Aircraft Noise Exposure. May.

Ridgecrest Regional Hospital. 2011. Hospital Services. Ridgecrest Regional Hospital. Available at http://www.rrh.org/hospital-services. Accessed 19 July 2011.

Rogers, Alexander K. 2009. *Land, People, and Rock Art of the Coso Range*. Maturango Museum Publication No. 24. Maturango Press, Ridgecrest, CA.

Rondeau, M.F., J. Cassidy, and T.L. Jones. 2007. Colonization Techniques: Fluted Projectile Points and the San Clemente Island Woodworking/Microblade Complex. In T. Jones and K. Klar, eds. *California Prehistory: Colonization, Culture, and Complexity,* pp. 63–69. Altimira Press, NY.

Rosenthal, J.S., K.L. Carpenter, and D.C. Young. 2001. *Archaeological Survey of Target Buffer Zones in the Airport Lake, Baker, and George Ranges, Naval Air Weapons Station, China Lake, Inyo and Kern Counties, California*. Report submitted to Southwest Division, Naval Facilities Engineering Command, San Diego.

Ruby, A. 2007. *A Section 110 Cultural Resources Inventory and Overview of 4,950 Acres West of the Argus Range and East of Darwin Wash, Naval Air Weapons Station, China Lake, Inyo County, California*. Report on file, Naval Air Weapons Station, China Lake, CA.

San Bernardino County. 2007. *San Bernardino County General Plan*. March.

Sawyer, J.O., and T. Keeler-Wolf. 1995. *A Manual of California Vegetation*. California Native Plant Society. Sacramento, CA.

Seidman, Harry and Ricarda L. Bennett. 1981. Comparison of Noisemap Computer Program with and without the SAE Latteral Attenuation Model. June.

Sierra Sands Unified School District (SSUSD). 2011a. Richmond Elementary School, School Accountability Report Card, 2009–2010. Schoolwise Press 2010. Available at http://sierrasands.schoolwisepress.com/reports/2010/pdf/sierrasands/sarci_en_15-73742-6009328e.pdf. Accessed 19 July 2011.

SSUSD. 2011b. Murray Middle School, School Accountability Report Card, 2009–2010. Schoolwise Press 2010. Available at http://sierrasands.schoolwisepress.com/reports/2010/pdf/sierrasands/sarci_en_15-73742-6009310m.pdf. Accessed 19 July 2011.

SSUSD. 2011c. Burroughs High School, School Facts and Accountability Information, 2009–2010. Schoolwise Press 2010. Available at http://sierrasands.schoolwisepress.com/home/site.aspx?entity=14171&year=2010&locale=en-US. Accessed 19 July 2011.

SSUSD. 2011d. James Monroe Middle School, School Facts and Accountability Information, 2009–2010. Schoolwise Press 2010. Available at http://sierrasands.schoolwisepress.com/home/site.aspx?entity=14255&year=2010&locale=en-US. Accessed 19 July 2011.

SSUSD. 2011e. School Facts and Accountability Information, 2009–2010. Schoolwise Press 2010. Available at http://sierrasands.schoolwisepress.com/home/Default. aspx?year=2010. Accessed 19 July 2011.

SSUSD. 2011f. Pierce Elementary School, School Accountability Report Card, 2009–2010. Schoolwise Press 2010. Available at http://sierrasands.schoolwisepress.com/home/site.aspx?entity=14235&year=2011&locale=en-US.

Smith, C.R. 1978. Tübatulabal. In *California*, edited by R.F. Heizer, pp. 437–445. Handbook of North American Indians, Vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Smith, G.I. 1956. *Geology and Petrology of the Lava Mountains, San Bernardino County, California*. PhD. dissertation, California Institute of Technology, Pasadena, California.

Society of Vertebrate Paleontology (SVP). 1995. Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources—Standard Guidelines. *Society of Vertebrate Paleontology News Bulletin* 166:22–27.

Society of Vertebrate Paleontology. 1996. Conditions of Receivership for Paleontologic Salvage Collections. *Society of Vertebrate Paleontology News Bulletin* 166:31–32.

Soil Conservation Service (SCS). 1989. *Soil Survey of Portions of the China Lake Weapons Center, California, Including Parts of Inyo, Kern, and San Bernardino Counties, Interim Report*. Prepared in cooperation with the Department of the Navy, China Lake Naval Weapons Center, CA.

Solar Millennium. 2009. Ridgecrest Solar Power Project Application for Certification. 1 September.

Southern Sierra Research Station. 2010. Desert Tortoise Surveys at the Naval Air Weapons Station China Lake, California, Spring 2008.

Southern Sierra Research Station. 2011. p 96 ch. 3 section 3.6.1.2.

Speakman, Jerry D. 1989. AAMRL-TR-89-034. Lateral Attenuation of Military Aircraft Flight Noise. Final Report for Field Test and Analysis: April 1984 – September 1988. July.

St. Amand, P. 1986. *Water Supply of Indian Wells Valley, California*, NWC TP 6404, Map Scale 1:618,000. April.

Steers, Robert J., and Edith B. Allen. 2011. Native Annual Plant Response to Fire: an Examination of Invaded, 3 to 29 Year Old Burned Creosote Bush Scrub from the Western Colorado Desert, *Natural Resources and Environmental Issues*: Vol. 17, Article 20.

Steward, J.H. 1929. Petroglyphs of California and Adjoining States, *University of California Publications in American Archaeology and Ethnology* 24(2).

Steward, J.H. 1933. Ethnography of the Owens Valley Paiute. *University of California Publications in American Archaeology and Ethnology* 33(3).

Steward, J.H. 1937. Ecological Aspects of Southwestern Society. *Anthropos*. 32(1):87–104.

Steward, J.H. 1938. *Basin–Plateau Aboriginal Sociopolitical Groups*. Smithsonian Institution Bureau of American Ethnology, Bulletin 120. Washington, DC.

Stoner, Mike. 2011. Personal communication with Mike Stoner, NAWSCL Water Resources Manager, regarding status of water resources at NAWSCL.

Stoner, M., T. Bilhorn, J. Maas, and S. Dickey. 1995. *Native Spring Investigation Data Report: NA WS CL TP 005,* 87 pp.

Streitz, R., and M.C. Stinson. 1974. Geologic map of California: Death Valley sheet. California Division of Mines and Geology, scale 1:250,000.

Sutton, M.Q., M.E. Basgall, J.K. Gardner, and M.A. Allen. 2007. Advances in Understanding Mojave Desert Prehistory. In *California Prehistory: Colonization, Culture, and Complexity, edited by* T. Jones and K. Klar, pp. 229–246. Altimira Press, NY.

Tetra Tech and Far Western Anthropological Research Group (Tetra Tech). 1999. *Archaeological Sample Survey of the Inner Ranges, North Range Complex Naval Air Weapons Station, China Lake, California*. Report on file, Naval Air Weapons Station, China Lake, CA.

Tetra Tech. 2003. *Draft Basewide Hydrogeologic Characterization Summary Report Naval Air Weapons Station China Lake, California*. January. Prepared for Department of the Navy, Naval Facilities Command Southwest Division.

Thomas, David H., Lorann S.A. Pendleton, and Stephen C. Cappannari. 1986. Western Shoshone. In *Great Basin*, edited by Warren L. D'Azevedo, pp. 262–283. Handbook of North American Indians, vol. 11, W.C. Sturtevant, general editor, Smithsonian Institution, Washington, D.C.

Tierra Data, Inc. 2011. *Integrated Natural Resources Management Plan, Naval Air Weapons Station China Lake Revised Preliminary Draft*. Prepared for Naval Air Weapons Station China Lake, CA.

Todd Engineers. 2014. *Indian Wells Valley Resource Opportunity Plan, Water Availability and Conservation Report*, January.

Transportation Research Board. 2009. *Highway Capacity Manual*.

Underwood, J. 2004. Ethnographic Overview, in *Cultural Resources Survey and Evaluation, South Range and Mainsite Management Unit, Naval Air Weapons Station China Lake, California,* pp. 20–32, R.W. Deis and J. Underwood. Prepared by EDAW, Inc., San Diego, California.

URS Consultants. 1989. *Archaeological Reconnaissance Survey of Superior Valley Range, China Lake Naval Weapons Center and Leach Lake Range, Fort Irwin Reservation, California*. Report on file, NAWSCL.

U.S. Air Force. 1999. *Effects of Flight Noise from Jet Aircraft and Sonic Booms on Hearing, Behavior, Heart Rate, and Oxygen Consumption of Desert Tortoises (Gopherus agassizii),* Final Report, May.

U.S. Air Force. 2001. *Draft Environmental Impact Statement for F-22 Operational Wing Beddown*, HQ ACC/CEVP, Langley AFB, VA. April.

U.S. Air Force. 2003. *Final Supplemental Environmental Impact Statement, Airborne Laser Program, Kirtland AFB, White Sands Missile Range, Holloman AFB, New Mexico; Edwards AFB, Vandenberg AFB, California*. June.

U.S. Air Force. 2009a. *Final Supplemental Environmental Impact Statement, PAVE PAWS Early Warning Radar Operation, Cape Cod Air Force Station, MA*. June.

U.S. Air Force. 2009b. *Final Environmental Assessment/Overseas Environmental Assessment, F-35 Joint Strike Fighter Initial Operational Test and Evaluation*. September.

U.S. Air Force. 2012. *R-2508 Complex Users Handbook*. March 29.

U.S. Army. 1999. *Human/Ecological Health Risk and Migration Assessment of a Conventional Munitions Test Range YPG-KOFA Range*, Yuma, AZ. September.

U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM). 2005. *Operational Noise Manual, An Orientation for Department of Defense Facilities*. Prepared by Operational Noise Program Directorate of Environmental Health Engineering. November.

U.S. Census Bureau. 2002a. *Census 2000 Summary File 1*. Accessed 13 July 2011.

U.S. Census Bureau. 2002b. *Census 2000 Summary File 3*. Accessed 13 July 2011.

U.S. Census Bureau. 2011. *American Community Survey 5-Year Estimates*. U.S. Census Bureau, 2010. Accessed 13 July 2011.

U.S. Department of the Interior, Bureau of Land Management (BLM). 1980. Conservation Area Plan 1980 as amended. Available at http://www.blm.gov/pgdata/etc/medialib//blm/ca/pdf/pdfs/cdd_pdfs.Par.aa6ec747.File.pdf/CA_Desert_.pdf. Accessed December 2011.

U.S. Department of the Interior (DOI). 1995. *Wilderness Areas Maps and Information Guide*.

U.S. Environmental Protection Agency (USEPA). 1992. *Procedures of Emission Inventory Preparation, Volume IV: Mobile Sources*. December.

USEPA. 2006. *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Chapter 15, Ordnance Detonation, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Washington, D.C.

USEPA. 2007. Particulate Matter (PM),Health. Available at http://www.epa.gov/air/particlepollution/health.html.

USEPA. 2009a. Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act. Final findings were published in the Federal Register under Docket ID No. EPA-HQ-OAR-2009-0171 on 15 December.

USEPA. 2009b. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2007*. 15 April.

USEPA. 2011. EPA Green Book, Nonattainment Areas for Criteria Pollutants. 30 August. Available at http://www.epa.gov/oar/oaqps/greenbk/.

USEPA. 2012. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2010*. 15 April.

U.S. Fish and Wildlife Service (USFWS). 1993. *Desert tortoise (Mojave population) Draft Recovery Plan*. U.S. Fish and Wildlife Service, Portland, Oregon.

USFWS. 1994. Determination of Critical Habitat for the Mojave Population of the Desert Tortoise. *Federal Register*: 59 FR 5820–5866.

USFWS. 1996. *Endangered and Threatened Wildlife and Plants; Review of Plant and Animal Taxa that are Candidates for Listing as Endangered or Threatened Species*, 50 CFR Part 17, 28 February.

USFWS. 1998a. *Endangered and Threatened Wildlife and Plants, Final Rules on Listing*, 50 CFR Part 17, 6 October.

USFWS. 1998b. *Recovery Plan for the Inyo California Towhee (Piplio crissalis eremophilus),* prepared by the Ventura Fish and Wildlife Office, U.S. Fish and Wildlife Service for Region 1, U.S. Fish and Wildlife Service, Portland, OR. April.

USFWS. 2008. *Inyo California Towhee (Pipilo crissalis eremophilus) [=Inyo Brown Towhee (Pipilo fuscus eremophilus)], 5-Year Review: Summary and Evaluation*. September.

USFWS. 2009a. *List of Endangered and Threatened Wildlife*. 50 CFR Ch. 1 (10-1-09 Edition), Section 17.11.

USFWS. 2009b. *Endangered and Threatened Wildlife and Plants*, 50 CFR Part 17.11 & 17.12.

USFWS. 2010. Signed Cooperative Management Agreement for the Management of the Inyo California Towhee. Reference No. 81440-2010-B-0173. Ventura Fish and Wildlife Office. June 11.

USFWS. 2011. *Revised Recovery Plan for the Mojave Population of the Desert Tortoise (Gopherus agassizii)*. U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. 222 pp.

USFWS. 2013a. *Biological Opinion for the Renewal of the Naval Air Weapons Station, China Lake Public Lands Withdrawal, California* (5090 Ser P{R241/397)(8-8-12-F-29), February 19.

USFWS. 2013b. *Draft Post-Delisting Monitoring Plan for the Inyo California Towhee (Pipilo crissalis eremophilus = Melozone crissalis eremophilus) [Inyo Brown Towhee (Pipilo fuscus eremophilus)].* November.

U.S. Navy. 1979a. Memorandum of Agreement between the U.S. Government, and the Coso Ad Hoc Committee, Owens Valley Paiute-Shoshone Band of Indians for access to the Coso Hot Springs, Naval Weapons Center, China Lake, California. Document on file at NAWSCL.

U.S. Navy. 1979b. Memorandum of Agreement between the U.S. Department of the Navy, China Lake Naval Weapons Center and the Advisory Council on Historic Preservation for development of geothermal energy within the Coso Known Geothermal Resources Area. Document on file at NAWSCL.

U.S. Navy. 1979c. *Final Environmental Impact Statement for the Navy Coso Geothermal Development Program, China Lake, California*. NWC Public Works Department.

U.S. Navy. 1981. *Environmental Impact Statement, Feral Burro Management Program*. October.

U.S. Navy. 1982. Environmental Assessment, Interim Wild Horse Management Program. November.

U.S. Navy. 1989a. *Naval Weapons Center China Lake Master Plan, Volume 1*. Prepared by Innis – Tennebaum Architects, San Diego, CA. June.

U.S. Navy. 1989b. *Naval Weapons Center China Lake Master Plan, Volume 2*. Prepared by Innis – Tennebaum Architects, San Diego, CA. June.

U.S. Navy. 1996. China Lake Range Management Plan, Draft.

U.S. Navy. 1997. *Final Land Use Patterns Report for Naval Air Weapons Station China Lake in Support of the Land Use Management Plan and Environmental Impact Statement*. October.

U.S. Navy. 1998. OPNAV Instructions 3550.1. Range Air Installations Compatible Use Zones (RAICUZ) Program. Chief of Naval Operations, Commandant of the Marine Corps. 7 August.

U.S. Navy. 1999. *Characterization of Disturbance and Biological and Cultural Resources Within Target Buffer Areas on NAWS, China Lake, Final Report*. January.

U.S. Navy. 2000. *Naval Air Weapons Station China Lake California, Integrated Natural Resources Management Plan (INRMP) 2000–2004*.

U.S. Navy. 2004a. *Final Environmental Impact Statement for Proposed Military Operational Increases and Implementation of Associated Comprehensive Land Use and Integrated Natural Resources Management Plans, Volume I*. Prepared by Naval Air Weapons Station China Lake and the Bureau of Land Management. February.

U.S. Navy. 2004b. U.S. Navy Geothermal Program Office Assessment of Report "Analysis of Causes of Hydrologic Changes at Coso Hot Springs" by Dr. Robert R. Curry, March, 2004 and submitted to Capt. M.G. Storch, Commanding Officer. NAWS by the Fort Independence Indian Reservation Tribal Chairperson. 14 June.

U.S. Navy. 2005a. *Comprehensive Land Use Management Plan (CLUMP) for Naval Air Weapons Station China Lake, CA*. May.

U.S. Navy. 2005b. Memorandum on Ground Training Noise Guidance for Marine Corps Installations. Assistant Deputy Commandant, Installations and Logistics (Facilities). 29 June.

U.S. Navy. 2005c. *The Navy Safety and Occupational Health Program Manual*, OPNAVINST 5100.23G, December.

U.S. Navy. 2006a. *Realignment and Development of a Naval Integrated Weapons and Armaments Research, Development, and Acquisition, Test and Evaluation Center at Naval Air Weapons Station China Lake Traffic Study*.

U.S. Navy. 2006b. *Final Environmental Assessment for the Construction and Use of the Naval Expeditionary Combat Command Training Complex at the Naval Air Weapons Station, China Lake California*. Prepared by U.S. Naval Air Weapons Station China Lake, CA; Epsilon Systems Solutions; Far Western anthropological Research Group, Inc., and Pacific Western Technologies.

U.S. Navy. 2007a. *Final Air Installation Compatible Use Zone Study, Naval Air Weapons Station, China Lake*. May.

U.S. Navy. 2007b. *Final Realignment and Development of a Weapons Survivability Complex at Naval Air Weapons Station China Lake, California Environmental Assessment*. August.

U.S. Navy. 2007c. *Activity Overview Plan (AOP), Naval Air Weapons Station China Lake, California*. July.

U.S. Navy. 2008a. *Navy Laser Hazards Control Program,* OPNAVINST 5100.27B. May.

U.S. Navy. 2008b. *Airfield Master Plan, Naval Air Weapons Station China Lake, California*. January.

U.S. Navy. 2008c. *Final Environmental Assessment Realignment and Development of a Naval Integrated Weapons and Armaments Research, Development, and Acquisition, Test and Evaluation Center at Naval Air Weapons Station China Lake, California*.

U.S. Navy. 2010. *Mainsite Master Plan, Naval Air Weapons Station China Lake, California*. October.

U.S. Navy. 2011a. *NAVAIR Range Complex Management Plan*. NAVAIR Ranges Sustainability Office, Point Mugu, California. October.

U.S. Navy. 2011b. "Force Protection." Naval Air Weapons Station China Lake. Available at http://www.cnic.navy.mil/ChinaLake/OperationsAndManagement/ForceProtecti on/index.htm. Accessed 18 July 2011.

U.S. Navy. 2011c. "Fire and Emergency Services." Naval Air Weapons Station China Lake. Available at http://www.cnic.navy.mil/ChinaLake/OperationsAndManagement/FireAndEmergencyServices/index.htm. Accessed 18 July 2011.

U.S. Navy. 2011d. "Medical Clinic." Naval Air Weapons Station China Lake. Available at http://www.cnic.navy.mil/ChinaLake/InstallationGuide/FacilitiesAndResources/MedicalClinic/index.htm. Accessed 18 July 2011.

U.S. Navy. 2011e. *NAWS China Lake Economic Impact Assessment Technical Report, Revised*. Naval Air Weapons Station China Lake, California. February.

U.S. Navy. 2011f. *Final Aircraft Noise Study for Naval Air Weapons Station China Lake, California*. April.

U.S. Navy. 2011g. Personal communication with NAWSCL Qualified Recycling Program Staff regarding annual recycling statistics.

U.S. Navy. 2011h. *Final Air Installations Compatible Use Zones Study, Naval Air Weapons Station China Lake, California*. April.

U.S. Navy. 2012a. Programmatic Agreement Among the U.S. Department of Navy, Naval Air Weapons Station China Lake, The Advisory Council on Historic Preservation and The California State Historic Preservation Officer Regarding Implementation of Integrated Cultural Resources Management Plan at Naval Air Weapons Station China Lake, California. September.

U.S. Navy. 2012b. *Integrated Cultural Resources Management Plan for Naval Air Weapons Station, China Lake, Inyo, Kern, and San Bernardino Counties, California*. Prepared for U.S. Department of the Navy, Naval Air Weapons Station, China Lake.

U.S. Navy. 2013a. Personal Communication with NAWSCL Natural Resources Manager Tom Campbell regarding fire management measures and history of wild fires on NAWSCL. 13 February.

U.S. Navy. 2013b. Cadastral Survey Map of Naval Air Weapons Station, China Lake Lands, 22 February.

U.S. Navy. 2013c. Wild Horse and Burro Management Plan for Naval Air Weapons Station China Lake. Unpublished report submitted by Tierra Data Inc. to Naval Facilities Engineering Command Southwest and Naval Air Weapons Station China Lake.

U.S. Navy. 2014. Finding of No Significant Impact for the Environmental Assessment on the Revised Integrated Natural Resources Management Plan for Naval Air Weapons Station China Lake, Inyo, Kern, and San Bernardino Counties, California. 2 September.

Voegelin, Erminie W. 1938. Tübatulabal Ethnography. *University of California Anthropological Records* 2(1):1–84. Berkeley.

Warren, Elizabeth von Till. 1981. *Cultural Resources of the California Desert, 1776–1980: Historic Trails and Wagon Roads*. Russell Kaldenberg, Series Editor. Prepared by the Bureau of Land Management.

WESTEC Services. 1979. *Withdrawal of Mojave B Ranges.* Prepared for Environmental Protection Office, China Lake, by WESTEC Services. Tustin.

Whelan, J.A., and Baskin, R. 1987. *A Water Geochemistry Study of Indian Wells Valley, Inyo and Kern Counties, California.*

Whitley, David S. 2000. *Art of the Shaman: Rock Art of California*. Salt Lake City: University of Utah Press.

Wyle. 2010. *Aircraft Noise Study for Naval Air Weapons Station China Lake, California*. April.

Yearsley, E., J. Copp, J. McCulloch, B. Berard, S. Bjornstad, A. Katzenstein, D. Meade. 1994. *Coso Hot Springs Hydrology Report*. CECI and USN GPO.

Zigmond, Maurice L. 1986. Kawaiisu. In *Great Basin*, edited by Warren L. D'Azevedo, pp. 398–411. Handbook of North American Indians, Volume 11. Washington, D.C.: Smithsonian Institution.

This page intentionally left blank.

CHAPTER 7.0
AGENCIES AND REPRESENTATIVES CONTACTED

The military representatives and agencies that were contacted during the course of preparation of the EIS/LEIS are listed below.

Military

NAVFAC, Southwest

NAWSCL, Environmental Management Division

NAWCWD, Sustainability Office

Federal Agencies

Bureau of Land Management
U.S. Bureau of Labor Statistics
U.S. Bureau of the Census
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service

State Agencies

California Air Resources Board
California Department of Education
California Department of Fish and Game
California Environmental Protection Agency, Department of Toxic Substances Control
California State Historic Preservation Officer
City of Ridgecrest
Indian Wells Valley Water District
Kern County Air Pollution Control District
Kern County Fire Department

Tribal Groups

Big Pine Paiute Tribe of the Owens Valley
Bishop Paiute Shoshone Tribal Council
Bridgeport Indian Colony
Fort Independence Paiute Community Council
Lone Pine Paiute Shoshone Community Council
TimbiSha Shoshone Tribe
Utu Utu Gwaitu Benton Paiute Tribal Council

The federal and local agencies, organizations, and individuals listed below responded to the scoping request.

Federal Agencies

U.S. Environmental Protection Agency, Region 9, Karen Vitulano

State Agencies

California Department of Transportation (Caltrans) District 9, Gayle Rosander
California Regional Water Quality Control Board, Lahontan District 6, Omar Pacheco
Native American Heritage Commission, Dave Singleton
State Lands Commission, Jim Porter

Local Agencies

Darwin Community Services District, Michael Laemmte
Darwin Community Services District, Patricia Laemmte
Eastern Kern County Conservation District, Donna C. Thomas
Inyo County Board of Supervisors, Susan Cash
Indian Wells Valley Airport Board of Directors, Jim Paris
Kern County Fire Department, Capt. Bill Brikey

Organizations

Arnold, Bleuel, LaRochelle, Mathews, and Zirbel, LLP (on behalf of Little Lake Ranch, Inc.), Gary D. Arnold
California Association of 4 Wheel Drive Clubs, John Stewart
Caracole Soaring, Cindy Brickner
Coyote Canyon Caballod d'Anza, Inc., Kathleen Hayden
Coyote Canyon Caballod d'Anza, Inc., Robert Hayden
National Public Lands News, Sophia Merk
Pleistocene Foundation, Raymond Kelso
Society for the Protection and Care of Wildlife, H. Marie Brashear
TMR Rescue – Wild Burro Protection League, Karen E. Van Atta

Native American Organizations

Big Pine Paiute Tribe of the Owens Valley, Virgil Moose
Bishop Tribal Council, Dale Delgado, Jr.
Bridgeport Indian Colony, John Glazier
Fort Independence Paiute Tribe, Priscilla Naylor
Inter-Tribal Council of California, Inc., Connie Reitman
Kern Valley Indian Council, June Walker-Price
Lone Pine Paiute-Shoshone Reservation, Melvin R. Joseph
Mono Lake Kutzadika Tribe, Charlotte Lange
Owens Valley Indian Water Commission, Teri Red Owl
Timbisha Shoshone Tribe, Pauline Esteves
Timbisha Shoshone Tribe, Barbara Durham
Timbisha Shoshone Tribe – Bishop Office, George Gholson
Tübatulabal Tribe, Donna Miranda-Begay

Individuals

Mary Austin
Sonny Barger II
Linda Berardo
John V. Ciani
Bruce Curtis
Joyce Dillard
Bob Greenfield
Patrick Hannan
Lavon Lavon
Penelope LePome
Eric Lindvall
Ervin Longstreet
Jim Macey
Stanley G. Rajtora, PhD
Joe Ross
John Rothgeb
Ron Schiller

CHAPTER 8.0
LIST OF PREPARERS AND CONTRIBUTORS

Individuals from Naval Region Southwest (NRSW), San Diego, California; Naval Air Weapons Station China Lake (NAWSCL); Naval Air Warfare Center Weapons Division (NAWCWD); the Bureau of Land Management (BLM); and contractor personnel who were involved in the preparation and review of the EIS/LEIS are listed below.

Navy

Brenda Abernathy, Air Quality, NAWSCL Environmental Management Division
Nancy Army, NEPA Coordinator, NAWSCL Environmental Management Division
Mike Baskerville, Cultural Resources, NAWSCL Environmental Management Division
Gene Beale, NRSW/NAVFACSW NEPA Project Manager
Tom Campbell, Natural Resources, NAWSCL Environmental Management Division
Hiphil Clemente, NRSW/NAVFACSW NEPA Project Manager
Dwight Deakin, NAWCWD Operations Coordinator
Tim Fox, Community Planning and Liaison Officer, NAWSCL
Kevin Frantz, EXWC Geothermal Program Office
Lisa Talcott, NRSW/NAVFACSW NEPA Program Manager
Dean Hill, Petroleum Storage and Management Program, NAWSCL Environmental Management Division
Robin Hoffman, NAWCWD Environmental Coordinator
Kathy Killinger, NRSW N5-Installation Business Analyst
James McDonald, Installation Restoration Program, NAWSCL Environmental Management Division
Dave Meade, EXWC Geothermal Program Office
Steve Mendenhall, NAWCWD Sustainability Office
Connie Moen, NRSW N45 NEPA Coordinator
Lindsey Green, NRSW/NAVFACSW Real Property and Real Estate
John O'Gara, Director, NAWSCL Environmental Management Division
Steve Pennix, NAWCWD Environmental Coordinator
Kermit Richards, NAWSCL Production Division, Facilities Management & Sustainment Branch
Andy Sabin, Ph.D., EXWC Geothermal Program Office
Peggy Shoaf, NAWSCL Public Affairs Office
Mike Stoner, Geologist, NAWSCL Environmental Management Division
Deborah Storch, NAWSL Asset Management Branch
Mike Waters, NRSW/NAVFACSW Office of General Counsel
Laurie Zellmer, Hazardous Materials and Hazardous Waste Management, NAWSCL Environmental Management Division

BLM

Liz Easley, Realty Specialist/Natural Resources, Central California District
A. Este Stifel, Manager, Central California District

AECOM

Michael Arizabal, Senior Transportation Planner (Transportation)
B.S., 2004, Civil Engineering, University of California, Irvine
Years of Experience: 8

Chris Cavers, Project Environmental Professional (Hazardous Materials Management and Soils and Geology)
B.S., 1997, Environmental Resources Engineering, California State University, Humboldt
Years of Experience: 15

Komal Dewan, Planner (Land Use)
B.S., 1992, Community Planning, University of Maryland
M.S., 1994, Architecture, University of Maryland
Years of Experience: 20

Tim Erney, Associate Vice President, Transportation (Transportation)
B.S., 1995, Boston University
M.S., 1997, University of California, Berkeley
M.C.P., 1997, University of California, Berkeley
Years of Experience: 16

Jeff Goodson, Air Quality Specialists (Air Quality and Noise)
B.S., 1981, Geology, College of Charleston
B.S., 1987, Civil Engineering, Clemson University
Years of Experience: 20

Ray Hrenko, Principal, Senior Manager/Senior Environmental Scientist (NEPA)
B.S., 1980, Environmental Science, Florida Institute of Technology
Years of Experience: 42

David Jury, Senior Environmental Professional (NEPA)
B.A., 1988, Geography, California State University, Long Beach
Years of Experience: 25

Stephanie Lohstroh, CPSWQ, QSD, Senior Environmental Analyst (Water Resources)
B.S., 1999, Forestry and Natural Resource Management, California State Polytechnic University, San Luis Obispo,
Years of Experience: 14

Michael Phillips, PE, Civil Engineer (Utilities)
B.S., 1970, Civil Engineering, University of Nevada, Reno
Years of Experience: 43

Lyndon Quon, Senior Biologist (Biological Resources)
B.A., 1989, Ecology, University of California, San Diego
Years of Experience: 23

Tanya Wahoff, Archaeologist (Cultural Resources)
B.A., 1980, Anthropology, University of California, Santa Barbara
M.A., 2008, Archaeology and Heritage, Leicester University, United Kingdom
Years of experience: 28

Stephen Weidlich, Ethnographer and Environmental Analyst (Socioeconomics and Environmental Justice)
B.A., 2003, Anthropology, DePaul University, Chicago
M.S., 2007, Anthropology, Florida State University, Tallahassee
Years of Experience: 7

Mark E. Williams, Senior Environmental Scientist (Water Resources)
B.S., 1978, Oceanographic Technology, Florida Institute of Technology, Jensen Beach
Years of Experience: 34

Fang Yang, Senior Air and Noise Engineer (Air Quality and Noise)
B.S., 1982, Physics, Fudan University
M.S., 1988, Atmospheric Science, New York University
Years of Experience: 24

Epsilon Systems

Mark Dimsha, NEPA Specialist (Air Quality, Human Health and Safety, and Mission Requirements)
M.S., Civil Engineering (Environmental), 2000, University of New Mexico, Albuquerque, New Mexico
Years of Experience: 17

Chris Duran, Archaeologist (Cultural Resources)
M.A. Anthropology, Applied Archaeology, Northern Arizona University, Flagstaff, Arizona
Years of Experience: 4

Susan Williams (Biological Resources)
B.S. Biology, 1985, California State Polytechnic University, Pomona
Years of Experience: 27

Daniel Veazey (GIS Applications, Mapping, and Spatial Analysis)
Professional GIS and Computer Sciences Training
Years of Experience: 6

Sean Kajiwara (GIS Applications, Mapping, and Spatial Analysis)
B.A. Graphic Design, Western State Colorado University, Gunnison, Colorado
Years of Experience: 4

Resource Management Concepts, Inc.

Crystal Madden, Environmental Scientist, Mission Requirements
(Support for NAVAIR Ranges, Specialize in NAVAIR Range test and training operational requirements)
B.A., Biology,
Years of Experience: 8

CHAPTER 9.0
DISTRIBUTION LIST

Military

CAPT Harold Dunbrack, NAWCWD
Bruce Cargal, NAWS China Lake
Anthony Damiano, Ordnance Test and Evaluation Division, NAWS China Lake
Terry Ferrell, National Training Center, Fort Irwin
Clifford Mauer, NAVFAC Southwest
Manny Joia, Commanding Officer, MC Logistics Base
Bryan Morrill, MCAS-YUMA
Paul Nelson, NAWS China Lake
Dan Reinke, Edwards Air Force Base
Lisa Tennyson, Shore Station Management Center
Chris Tompsett, NUWC Division Newport

Air Operations, NAWS China Lake
Air Test and Evaluation Squadron 31 (VX-31)
Air Test and Evaluation Squadron 9 (VX-9)
Branch Health Clinic, NAWS China Lake
Environmental Management Division, NAWS China Lake
EOD Mobile Unit Three Detachment, NAWS China Lake
EOD Training Unit One, NAWS China Lake
Explosive Safety, NAWS China Lake
Facilities Engineering and Acquisition Division (FEAD), NAWS China Lake
Fire & Emergency Services, NAWS China Lake
FISC Detachment, NAWS China Lake
Fleet and Family Readiness, NAWS China Lake
Force Protection Department, NAWS China Lake
Geothermal Program Office, NAWS China Lake
Judge Advocate General (JAG), Branch Office, NAWS China Lake
Marine Aviation Detachment (MAD), NAWS China Lake
Navy Munitions CONUS West Detachment, NAWS China Lake
Public Affairs Office, NAWS China Lake
Public Works, NAVFAC Southwest
Safety Division, NAWS China Lake

Federal Elected

Jeff Bingaman, Senate Energy and Natural Resources Committee
Barbara Boxer, United States Senate
Dianne Feinstein, United States Senate
Doc Hastings, House Natural Resource Committee
Jerry Lewis, Attn: Carol Kine, US Congress Office of Rep. Jerry Lewis

Carl Levin, Senate Armed Services
Edward Markey, House Natural Resource Committee
Kevin McCarthy, 22nd Congressional District
Buck McKeon, House Armed Services Committee
Lisa Murkowski, Senate Energy and Natural Resources Committee

Federal Agencies

Jim Abbott, BLM State Office
Sylvia Baca, Department of Interior
Nova Blazej, U.S. Environmental Protection Agency, Region 9 Environmental Review Office
Jared Blumenfeld, U.S. Environmental Protection Agency, Region 9, Pacific Southwest
Sarah Craighead, National Park Service, Death Valley National Park
Frank Dean, National Parks Services Golden Gate National Recreational Area
Gregg D. Fauth, Sequoia and Kings Canyon National Parks
Leslie Gordon, U.S. Geological Survey
Steven John, U.S. Environmental Protection Agency, Region 9, Southern California Field Office
Steve Landefeld, U.S. Bureau of Economic Analysis
Chris Lehnertz, Department of the Interior, National Park Service, NPS Pacific West Regional Office, Oakland
Ren Lohoefener, U.S. Fish and Wildlife Service, Pacific SW Region
Enrique Manzanilla, U.S. Environmental Protection Agency, Region 9, Communities & Ecosystems Division
Don McKernan, BLM Steering Committee
Diane Noda, U.S. Fish and Wildlife Service Ecological Services
Sue Porter, USDA - U.S. Forest Service
Teri Rami, BLM - California Desert District
Jon Regelbrugge, U.S. Forest Service - Inyo National Forest
Bob Schimelpfening, Federal Aviation Administration, Service Area Office for Western Terminal Operations
Cynthia Staszak, BLM - CASO
Wille R. Taylor, Department of Interior, Office of Environmental Policy/Compliance
R. Mark Toy, U.S. Army Corp of Engineers, Los Angeles District
Karen Vitulano, U.S. Environmental Protection Agency, Region 9 Environmental Review Office
Jim Whitfield, US Forest Service, Sequoia National Forest
Bill Withycombe, Federal Aviation Administration, FAA Western-Pacific Regional Office

Tribal Government and Organizations

Alan Bacock, Big Pine Paiute Tribe of Owens Valley
Charlie Cooke, Tehachapi Indian Tribe
Dale Delgado, Jr., Bishop Tribal Government and Organizations Council
Barbara Durham, Timbisha Shoshone Tribe
Pauline Esteves, Timbisha Shoshone Tribe
Don Forehope, Timbisha Shoshone Tribe
George Gholson, Timbisha Shoshone Tribe
John Glazier, Bridgeport Indian Colony
Bill Helmer, Big Pine Paiute Tribe of Owens Valley

Melvin R. Joseph, Lone Pine Paiute Shoshone Reservation
Charlotte Lange, Mono Lake Kutzadikaa
Sara Manning, Big Pine Paiute Tribe of Owens Valley
Dennis Matthison, Fort Independence Paiute Tribe
Donna Miranda-Begay, Tübatulabal Tribe
Janice McRoberts, Lone Pine Paiute Shoshone Reservation
Virgil Moose, Big Pine Paiute Tribe of Owens Valley
Kathryn Montes Morgan, Tejon Indian Tribe
Sanford Nabahe, Lone Pine Paiute Shoshone Reservation
Israel Naylor, Fort Independence Paiute Tribe
Priscilla Naylor, Fort Independence Paiute Tribe
Matthew J. Nelson, Bishop Paiute Shoshone Tribal Government and Organizations Council
Teri Red Owl, Owens Valley Indian Water Commission
June Price, Kern Valley Indian Community
Connie Reitman, Inter-Tribal Government and Organizations Council of California, Inc.
Robert Robinson, Kern Valley Indian Community
Joseph Sam, Bridgeport Indian Reservation
Billie G. Saulque, Utu Utu Gwaitu Paiute Tribe, Benton Paiute Tribal Government and Organizations Council
Val Spoonhunter, Bishop Paiute Shoshone Tribal Government and Organizations Council
William Vega, Bishop Paiute Shoshone Tribal Government and Organizations Council
June Walker-Price, Kern Valley Indian Community

State Elected

Jerry Brown, Governor, State of California
Connie Conway
Dana Culhane
Jean Fuller, California State Senate, District 32
Shannon Grove, California State Senate, District 18
Howard P. (Buck) McKeon, Congress, House of Representatives
Gavin Newsom, Lt Gov, State of California

State Agencies

Linda S. Adams, State of California Environmental Protection Agency
Connie Bruins, California Energy Commission
Milford Wayne Donaldson, Office of Historic Preservation, Dept. of Parks and Recreation
Curtis Fossom, State Lands Commission
James N. Goldstene, California Air Resources Board
Dan Holland, California Department of Transportation
Scott Morgan, California State Clearing House, Governor's Office of Planning and Research
H.D. Palmer, California Department of Finance
Jim Porter, Land Management Division, State Lands Commission
Gayle Rosander, Caltrans District 9
Harold Singer, California Regional Water Quality Control Board - Lahontan Regions
Jeffrey R. Single, California Department of Fish and Game, Region 4
Dave Singleton, Native American Heritage Commission

Local Elected

Lori Acton, Office of District 1 Kern County Supervisor
Ron Carter, City of Ridgecrest
Richard Cervantes, Inyo County
Chip Holloway, City of Ridgecrest
Jon McQuiston, Kern County District 1
Bill Mitzelfelt, San Bernardino
Steve Morgan, City of Ridgecrest
Jason Patin, City of Ridgecrest
Jerry Taylor, City of Ridgecrest

Local Agencies

Mark Backes, Indian Wells Valley Airport District
Brian Bartells, Community Co-Chair, Restoration Advisory Board
Deborah Robinson Barmack, San Bernardino Association of Governments
Marilyn Beardslee, Kern Council of Governments
Jonathan Becknell, Great Basin Unified Air Pollution Control District
Michael Bizon, Darwin Community Services District (DCSD)
Bill Brickey, Kern County Fire Department
Susan Cash, Chairperson, Inyo County Board of Supervisors
Leroy Corlett, Indian Wells Valley Water District Member, Restoration Advisory Board
Michael Cornell, Navy Member, Restoration Advisory Board
Jackson Crutsinger, San Bernardino County Environmental Health Services
Danny Domingo, Department of Toxic Substances Control Board Member, Restoration Advisory Board
Kathleen Goss, Darwin Community Services District
Joshua Hart, Inyo County Planning Department
Eldon Heaston, Mojave Desert Air Quality Management District
Oscar Hellrich, Mojave Desert Air Quality Management District
Barbara Houghton, Kern County Environmental Health Services Department, Restoration Advisory Board
Hasan Ikhrata, Southern California Association of Governments
Ted James, AICP, Kern County Planning Department
David Jones, Kern County Air Pollution Control District
Raymond Kelso, Community Co-Chair, Restoration Advisory Board
Bob Kennedy, Ridgecrest Community Hospital
Kathleen Krause, Kern County Board of Supervisors
David Kurdeka, Community Co-Chair, Restoration Advisory Board
Michael Laemmle, Darwin Community Services District (DCSD)
Patricia Laemmle, Darwin Community Services District (DCSD)
Moskowitz Marvin, Inyo County Department of Environmental Health Services
Craig McKenzie, Community Co-Chair, Restoration Advisory Board
Stephanie Meeks, Ridgecrest Community Hospital
Renee Morquecho, Indian Wells Valley Water District
Tom Mulvihill, Indian Wells Valley Water District
Dan Odom, San Bernardino County Fire Department

Omar Pacheco, Regional Water Quality Control Board Member, Restoration Advisory Board
Jim Paris, Indian Wells Valley Airport District, Board of Directors
Terry Rogers, Kern County Water Agency
Ted Schade, Great Basin Unified Air Pollution Control District
Denise Schiofield, Searles Valley Community Services Council
Dena Smith, San Bernardino County Planning Division
Ron Strand, City of Ridgecrest Police Department
Janet Stuebner, Inyokern Community Services District
Lee Sutton, Community Co-Chair, Restoration Advisory Board
Donna Thomas, Eastern Kern County Resource Conversation District
Kane Totzke, Kern County Water Agency
Kurt Wilson, City of Ridgecrest
Benny Wofford, Kern County Fire Department

Businesses and Organizations

Liz Allen, Sierra Club
Phil Arnold, IWV 2000 (China Lake Defense Alliance)
Richard E. Arruda, Terra-Gen Company, LLC
Cathy Barcomb, Humane Equine Rescue and Development Society
Bob Benbow, BRIGGS Corporation
Ann Marie Bergens, Vaughn Realty
Alan Berger, Animal Protection Institute
George Berrier, American Mustang and Burro Association
John Bignall, Pacific Gas and Electric Co.
Michael Blake, Public Lands Rescue Council
H. Marie Brashear, Society for the Protection and Care of Wildlife
Peggy Breeden, Well Owner's Association
Cindy Brickner, Caracole Soaring
Colleen Brock, Coso Operating Company LLC
Jerry Burdette, Southern California Edison
Brenda Burnett, Audubon Society Newsletter
Judy Cady, Friends of the Mustang
Jim Clapp, Carey Ranch WHB Sanctuary
Sharon Clark, Independence Chamber of Commerce
Matt Coolidge, Center for Land Use and Interpretation
Ann Coombs, League Of Women Voters
Joe Decarlo, Bakersfield Service Center PG&E
Kevin Doyle, Tetra Tech, Inc.
Chris Ellis, Coso Operating Company LLC
Donna Ewing, Hooved Animal Humane Society
Jill Fariss, Southern California Edison Co., Environmental Affairs
Paul Friesema, Institute for Policy Research Northwestern University
William Gallant, The SeaCrest Group
Christina Giraldo, Food Service, Warehouse & Transp, SSUSD

Gerry Goss, Desert Survivors
Arlene Grider, Independence Chamber of Commerce
Greg Halsey, Epsilon Systems Solutions, Inc.
Joel Hampton, Owens Valley Unified School District
Kathleen Hayden, Coyote Canyon Caballos d'Anza Inc.
Robert Hayden, Coyote Canyon Caballos d'Anza Inc.
Stephanie Hebert, Epsilon Systems Solutions, Inc.
Henry Hurkmans, Clearwater Group Inc.
Dan Jacobson, CALPIRG
Dick Jones, Agricultural Industries Incorporated
Pat Knapik, Cerro Coso Community College
John W. Lamb, J&R Construction and Engineering
David Lamfrom, National Park and Conservation Association
Benjamin J. Licari, BRIGGS Corporation
Robin Lohnes, American Horse Protection Association
Douglas Lueck, Ridgecrest Area Convention and Visitors Bureau
Patricia A. Matthews, Turner, Collie, and Braden, INC.
Ross May, Searles Valley Minerals
Sophia Merk, NPL News
Steve McCalley, Environmental Health Director
Elaine Mead, Brown Road Hay and Grain, Inc.
Sam Miller, Saalex Solutions, Inc.
Suzy Moraes, League of Women Voters Enact
L. Negri, American Mustang Association
April Nelson, Contractor
Ellen Nelson, American Mustang Association and Registry
Kathleen New, Lone Pine Chamber of Commerce
Penny Newman, CCHW/WEST
David Roe, Environmental Defense Fund
Alexander Rogers, Maturango Museum
Robert Rogers, Valley Riders, Inc.
Kevin Royle, Kern Kaweah Chapter, Sierra Club
Norbert Riedy, Wilderness Society
Joanna Rummer, Sierra Sands Unified School District
Brent Rush, Pacific Gas and Electric Co.
Dwight Schmidt, Southern California Edison Co., Environmental Affairs
Alex Schriener Jr., Vertex Engineering Services
Mary Ann Simonds, Whole Horse Institute
James Simmons, Kern County Community Foundation
Jody Sparks, Toxic Assessment Group
Bette Stallman, Humane Society of the U.S.
Greg Stepro, Scion Systems
Steve Stewart, Anheuser Busch C/O Cabin Bar Ranch
John Stewart, California Association of 4 Wheel Drive Clubs

John Stoll, Toxic Alliance
Davis Stowell, Geothermal Properties, Inc.
Dave Tattum, National Wild Horse Association
Sue Theiss, JT3/CH2M HILL
Larry Trowsdale, North American Chemical Company
Karen E. Van Atta, TMR Rescue, Wild Burro Protection League
Chuck White, Waste Management of North America
Victor Weisser, California Council for Environmental & Economic Balance
Jeanette Wiknich, Exchange Club
Jane Williams, California Community Against Toxics
Michael Worley, Glamis Company
American Horse Council Inc.
Audrey Ledesma Realty
Big Pine Chamber of Commerce
Bishop Chamber of Commerce
Burro Rescue-Rehab-Relocations- ONUS
Center for Biological Diversity
Defenders of Wildlife
Desert Managers Group
Kerncrest Audubon Society
Little Lake Ranch, Inc., C/O Gary D. Arnold, Arnold Bleuel LaRochelle Mathews & Zirbel LLP
Natural Resources Defense Council
Ridgecrest Chamber of Commerce
Sierra Club
The Western Lands Project
The Wildlands Conservancy
Wildlife Society

Information Repositories

Inyo County Free Library-Independence Branch
Naval Air Warfare Center Weapons Division, Public Affairs Office
Ridgecrest Branch Library
San Bernardino County Public Health Office

Media

Adelman Broadcasting
Antelope Valley Press
Bakersfield Californian
Barstow Desert Dispatch
Daily Independent
Inyo Register
Kern Valley Sun
Los Angeles Times
Mojave Desert News
News Review

San Bernardino Sun
San Diego Union Tribune
Victorville Daily Press
Weststar Channel 12

Individuals

Aldolph Amster
Gerald Austin
Mary Austin
Sonny Barger
Jean M. Bennett
Linda Berardo
John V. Ciani
Donna Ciani
Luke Crews
Bruce Curtis
Candace Davis
Joyce Dillard
John DiPol
Karen Gray
Vince Fong
Stephanie Forshee
John Geddie
Bob Greenfield
Patrick Hannan
Stan & Jeanie Haye
Julie Hendrix
April Hunter
David G. Jones
Raymond Kelso
Earl Kraay
Penelope LePome
John Lightburn
Eric Lindvall
Ervin Longstreet
Jim Macey
R.H. Martin
Sophia Merk
Tony Morin, Jr.
Frances O'Connor
Mark Pahuta
Leslie Peeples
Stan Rajtora
Joe Ross
John Rothgeb
Ron Schiller
Carolyn Shephard
Michael Stoner

Janet Westbrook
Earl Wilson
Laurie Zellmer

This page intentionally left blank.

CHAPTER 10.0
PUBLIC COMMENT AND RESPONSE

This chapter contains responses to comments submitted during the public review period on the Draft EIS/LEIS for the renewal of the NAWSCL public land withdrawal to allow the DoN to continue and increase/expand defense-related RDAT&E and training missions at NAWSCL. The official public review period was from August 10, 2012 to November 8, 2012 (90 days). Three public meetings were held at the following California locations: at the Marriott SpringHill Suites in Ridgecrest (October 2, 2012), at the Community Senior Center in Trona (October 3, 2012), and at Statham Hall in Lone Pine (October 4, 2012). At each meeting location, information poster stations were available from 6:00 to 8:00 p.m. At each public meeting, representatives from the DoN and BLM were available to answer questions regarding the Proposed Action and alternatives and findings of the EIS/LEIS. Copies of the Draft EIS/LEIS were available for public review at information repositories located in Kern, Inyo, and San Bernardino counties.

Public comments received during the public comment period indicated that certain key reference materials supporting the environmental impact analysis within the Draft EIS/LEIS were not made available to the public. As a result, the DoN re-opened the public review period for an additional 30 days (from January 11, 2013 to February 11, 2013) during which the Draft EIS/LEIS and the additional key reference materials were made available for public review on the project website (http://www.chinalakeleis.com) and at information repositories located in Kern, Inyo, and San Bernardino counties. A compact disc of the Draft EIS/LEIS and additional key reference materials were also made available upon request.

10.1 ORGANIZATION

This Public Comment and Response section is organized into several subsections, as follows:

- An index of commenters
- A consolidated comment-response table
- Transcripts of the public meetings and photocopies of comments received.

Public comments, including written comments, oral comments from the public meetings, and electronic comments, are provided in this section. A list of individuals making comments is provided in Table 10.1-1. The list of commenters includes the name of the commenter, the identifying document number that has been assigned to it, and the page number in this section on which the photocopy of the document is presented.

Comments received that are similar in nature or address similar concerns have been consolidated to focus on the issues of concern, and a response is provided that addresses the similar comments. Some comments simply state a fact or opinion; for example “the Draft EIS/LEIS adequately assesses the potential impacts on [a resource area].” Such comments, although appreciated, do not require a specific

Table 10.1-1
Index of Commenters
(Page 1 of 2)

Page	Document #	Author	Title/Agency
10-97	1	Transcript of Ridgecrest Public Meeting	
10-98	2	Transcript of Lone Pine Public Meeting	
10-100	3	Transcript of Fort Independence Tribal Meeting	
10-103	4	Mary J. Austin	Concerned citizen
10-103	4A	Mary Austin	Concerned citizen
10-104	5	Virgil Moose, Tribal Chairperson	Big Pine Paiute Tribe of the Owens Valley
10-108	6	Bill Vega, Vice Chairman	Bishop Tribal Council
10-109	7	James Blackwell	Concerned citizen
10-112	8	Marie Brashear	Concerned citizen
10-112	8A	Marie Brashear	Concerned citizen
10-113	9	Stuart Breil	Concerned citizen
10-113	10	Dennis Burge	Concerned citizen
10-114	11	Doug & Rose Marie Butler	Concerned citizens
10-114	12	Julia Clark	Concerned citizen
10-115	13	Richard Cervantes	County of Inyo, Board of Supervisors
10-115	14	Patricia Sanderson Port, Regional Environmental Officer	U.S. Department of the Interior, Office of Environmental Policy and Compliance
10-116	14A	Patricia Sanderson Port, Regional Environmental Officer	U.S. Department of the Interior, Office of Environmental Policy and Compliance
10-116	15	Kathleen Martyn Goforth, Environmental Review Office	U.S. Environmental Protection Agency, Region IX
10-118	16	Kathleen Goss	Concerned citizen
10-118	17	Bob Greenfield	Concerned citizen
10-118	18	James Howell	Concerned citizen
10-119	19	Marty Fortney, Chairperson	County of Inyo, Board of Supervisors
10-120	20	Johnnie Lloyd	Concerned citizen
10-120	21	Craig McKenzie	Concerned citizen
10-120	22	David Michael	Concerned citizen
10-120	23	Sheila Miller	Concerned citizen
10-121	24	Sophia Anne Merk	National Public Lands News
10-123	24A	Sophia Anne Merk	National Public Lands News
10-123	25	A. Raymond Kelso	Pleistocene Foundation
10-126	25A	A. Raymond Kelso	Pleistocene Foundation
10-126	26	Steven Porter	Concerned citizen

Table 10.1-1
Index of Commenters
(Page 2 of 2)

Page	Document #	Author	Title/Agency
10-127	27	Stan Rajtora, PhD.	Concerned citizen
10-130	27A	Stan Rajtora, PhD.	Concerned citizen
10-130	28	Terri Red Owl	The Owens Valley Indian Water Commission
10-133	29	Joe Ross	Concerned citizen
10-133	30	John Rothgeb	Concerned citizen
10-133	31	Ron Schiller	Concerned citizen
10-133	32	Ervin McMichael	Concerned citizen
10-134	33	Not Provided	Concerned citizen
10-134	34	Terri Red Owl	The Owens Valley Indian Water Commission
10-136	35	Dave Singleton	Native American Heritage Commission
10-137	36A	Rob Waiwood	Concerned citizen
10-139	37A	Chris Johnson	Concerned citizen
10-139	38A	Jim Knox	Concerned citizen

Note: Comments with an "A" indicate comments received during the re-opened public review period (Jan-Feb 2013).

response and are not called out herein. The comments and responses are grouped by area of concern, as follows:

1.0 Land Use
2.0 Noise
3.0 Air Quality
4.0 Biological Resources
5.0 Cultural Resources
6.0 Geology and Soils
7.0 Water Quality and Hydrology
8.0 Socioeconomics
9.0 Utilities and Public Services
10.0 Public Health and Safety
11.0 Hazardous Materials and Wastes
12.0 Traffic and Circulation
13.0 Appendices and Supporting Documents
14.0 Alternatives
15.0 Other Comments

Each comment has been assigned a number which corresponds to the numbered Comment Response Matrix (Table 10.1-2). Within each area, each consolidated comment-response is numbered sequentially. For example, under 10.0 Public Health and Safety, individual comments/responses are numbered 10.1, 10.2, etc. The adjacent column of the Comment Response Matrix contains a set of numbers that refer to the specific comment in the documents received that were combined into that consolidated comment. The numbers of the individual comments are indicated as 3-2, 6-2, 14-1, etc. Comment 3-2, for example, refers to document 3, comment number 2. A reader who wishes to read the specific comment(s) received may turn to the photocopies of the documents included at the end of this section. Thus the reader may reference back and forth between the consolidated comments/responses and the specific comment documents as they were received.

It should be emphasized that not only have responses to EIS/LEIS comments been addressed in this comment-response section, as explained, but the text of the EIS/LEIS has also been revised, as appropriate, to reflect the concerns expressed in the public comments.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
1. LAND USE				
1.1	2-4 30-4	Rothgeb, J.	Request to add a subheading "3.1.7.x Darwin Water Supply" and under this new subheading insert "The Darwin Community Services District (DCSD) has rights to access its historical water source, Coso Cold Springs, which is within NAWSCL boundaries. Recently a 5-year easement was approved by NAWSCL for DCSD access. The DCSD is recommending an easement be granted for the full 25 year period of the CLUMP."	Text has been revised to include the subheading 3.1.7.5, Darwin Water Supply, to clarify that on November 1, 1979 the Darwin Community Services District (DCSD) was granted an easement in perpetuity for the construction, installation, operation, maintenance, repair and replacement of a water pipeline to the Coso Cold Springs. This easement authorizes DCSD access in perpetuity to the water source at Coso Cold Springs, the pipeline right-of-way and such roads as may be required to construct and maintain the DCSD water system. The accompanying Memorandum of Agreement, dated November 3, 2010, sets specific requirements for DCSD's access and delineates administrative responsibilities.
	16-1	Goss, K.		
1.2	2-5	Leammle, M.	Request that an easement be granted for the DCSD to access the Coso Cold Springs for the same 25 year period as the NAWSCL withdrawal renewal.	Darwin Community Services District (DCSD) was granted an easement in perpetuity for the construction, installation, operation, maintenance, repair and replacement of a water pipeline to the Coso Cold Springs. Please see response to comment 1.1.
1.3	29-1	Ross, J.	Request for additional planning and authorization of Native American access, education and research projects, recreation, and commercial uses including energy development and power production.	Requests for additional planning and authorization of Native American access, education and research projects, recreation, and commercial uses will be considered on a case-by-case basis considering potential threats to public safety and potential conflict with mission requirements.
1.4	29-3	Ross, J.	Request to consider opening other additional recreational facilities to the public.	Access to recreational facilities on NAWSCL will continue in accordance with current agreements. Requests for access to other recreational facilities on NAWSCL will be considered on a case-by-case basis considering potential threats to public safety and potential conflict with mission requirements.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
1.5	29-4	Ross, J.	Desire for military to strive for better effectiveness and efficiency with allocated acres and compatible land uses.	Comment acknowledged.
1.6	8-4	Brashear, M.	Recommendation that the maps which show the non-military activities should reflect the Coso Cold Springs used by Darwin as a water source since the 1800s.	Figure 2-14 has been revised to show Coso Cold Springs.
1.7	8-5	Brashear, M.	Request allowance of rock hounding trips on a controlled basis similar to the nonmilitary activities currently allowed on base.	Rock hounding trips could be accommodated on a case-by-case basis to the extent compatible with safety and operational needs. Requests would be required to be submitted to the NAWSCL Public Affairs office for command consideration. A determination that no threats to public safety or conflict with mission requirements would be required prior to approval of proposed activities.
	31-1	Schiller, R.		
	21-1	McKenzie, C.		
1.8	8-6	Brashear, M.	Request allowance off-road tours over historic roads to a historic place or places.	Off-road tours could be accommodated on a case-by-case basis to the extent compatible with safety and operational needs. Requests would be required to be submitted to the NAWSCL Public Affairs office for command consideration. A determination that no threats to public safety or conflict with mission requirements would be required prior to approval of proposed activities.
	31-2	Schiller, R.		
1.9	8-9	Brashear, M.	Request that NAWSCL not share anything but air space with Fort Irwin.	Comment acknowledged. NAWSCL conducts DoD/inter-service activities to accomplish mission requirements.
1.10	8-14	Brashear, M.	Concern that the withdrawn BLM lands will be subject to the same WEMO legal action as the nonmilitary lands and that the Navy will need to conduct an inventory of roads/routes/trails and seeps and springs.	While an individual(s) could potentially attempt to challenge the DoN's land management practices, the WEMO legal action pertained to BLM lands not involved in the DoN's renewal of the public land withdrawal at Naval Air Weapons Station China Lake (NAWSCL) and thus NAWSCL is not subject to or affected by requirements imposed on BLM pursuant to

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				WEMO. Nonetheless, the DoN inventories roads, trails and springs to the extent practicable as funding and resources allow.
1.11	5-18	Moose, V.	Geothermal production is listed as a nonmilitary use on page ES-5 but not on page ES-11.	Text has been added to Table ES-1, page ES-11 regarding geothermal production.
1.12	24-6	Merk, S.	Add "The Darwin Community Services District (DCSD) has rights to access their historical water source, Coso Cold Spring, which is within NAWSCL boundaries. Recently a 5-year easement was approved by NAWSCL for DCSD access. The DCSD is recommending an easement for the full 25 years period of the CLUMP. Access to the Spring is needed so that routine and emergency maintenance can be performed at the Spring and on the direct access road when needed."	Please see response to comment 1.1.
1.13	19-1	Fortney, M.	The EIS/LEIS should address the fact that overflights from NAWSCL limit the potential development of some lands within Inyo County.	Typically, mission activities have a low potential to impact residential, commercial, and industrial development in Inyo County. Mission requirements have the potential to affect construction of tall structures that penetrate airspace and structures that cause potential radar and frequency interference (mostly industrial scale wind turbines and transmission towers) within Inyo County.
1.14	19-2	Fortney, M.	The EIS/LEIS should evaluate consistency with the County's planning policies and land use procedures.	Section 3.1.9 of the EIS/LEIS and Section 1.11 of the CLUMP discuss the consistency with applicable land use plans, including Inyo County's plans. The DoN participates in policies and processes through outreach efforts (i.e., Joint Land Use Study) and takes into consideration Inyo County planning policies and procedures. Also refer to the 2011 Air Installations Compatible Use Zones (AICUZ) Study (www.chinalakeLEIS.com) for discussion of consistency with Inyo County land use planning and

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				policy procedures.
1.15	12-1	Clark, J.	*Impacts from military overflights*- The impacts are not clearly stated that would be associated with an expected increase by up to 25 percent over existing conditions. There is some discussion of the impacts on songbirds but there is little or no analysis of impacts on wilderness character as well as human species.	Potential impact on wilderness character or human species from military overflights is evaluated under Sections 4.4, Biological Resources, and 4.10, Public Health and Safety. Section 4.1, Land Use, only addresses potential land use impacts. Section 4.2 Noise, addresses noise impacts to humans.
1.16	12-2	Clark, J.	*Restricted access to Native American sites, including Coso Hot Springs and Prayer Site and petroglyphs on the Installation* – The EIS/LEIS refers to continued discussions planned through leadership and consultation meetings. If more of those have taken place, please include the results of such meetings in the Final EIS/LEIS.	The DoN continues to participate in discussions planned through leadership and consultation meetings. The Tribes have identified their concerns and NAWS continues to discuss the new access agreement with them. Section 1.6.1 will be updated to reflect the government-to-government outreach efforts.
1.17	12-3	Clark, J.	*Restricted access to public lands for recreation* - Your statement that recreation would be "accommodated either on a case-by-case basis or according to established agreements and procedures" is too vague and non-descriptive. As a result, your analysis is incomplete. To fully disclose anticipated impacts, the Final EIS/LEIS must be more specific as to which activities will be accommodated and which will not.	Requests for access to recreational facilities (e.g., camping, hiking, hunting, equestrian use, golf, gym, off-road vehicle use, petroglyph tours, and bird watching) on NAWSCL would be required to be submitted to the NAWSCL Public Affairs office for command consideration and will continue to be considered on a case-by-case basis considering potential threats to public safety and potential conflict with mission requirements. Section 1.3 of the CLUMP presents the land use management goals to ensure safety and security of the public and the NAWSCL mission.
1.18	12-4	Clark, J.	The CLUMP must be included as an appendix to the EIS/LEIS if you are going to claim that "the CLUMP formalizes and streamlines land management practices, ensures operational readiness by facilitating ongoing and evolving test and training events, protects public health and safety, protects cultural resources, and conserves and protects	The CLUMP is included as Appendix C of the EIS/LEIS.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			natural resources."	
1.19	16-4	Goss, K.	There has been a significant increase in lighting on the North Range in recent years. Some of these lights seem to be aimed directly at Darwin. Please consider directing bright lights downward or otherwise shielding them, when practical, to preserve the integrity of the night sky.	When NAVFAC/EMD conducts construction work or contracts for the work, they are required to follow Unified Facilities Criteria (UFC) 3-530-01, Design: Interior, Exterior Lighting and Controls to mitigate direct and bright lights. The UFC sections concerning light pollution (Section 3-7) and light trespass (Section 3-8) are two areas where lighting mitigation is derived from. Design criteria for outdoor lighting typically includes directing lighting downward, reducing brightness, using sensors and timers, and incorporation of appropriate shielding to minimize off-site lighting.
2. NOISE				
2.1	27-11	Rajtora, S.	The risk mitigation presented in Section 4.2.2.2 is not applicable for mitigating the exceeded noise levels in developed areas since it relies on land use management. The noise levels exceed 70dB in northern Ridgecrest. There is roughly ten times the number of people exposed to 70dB noise off base as on base. Exceeding a noise compatibility threshold should only be tolerated based on significant safety risk or even greater operational constraint.	A determination as to what constitutes an approved land use on property in the vicinity of NAWSCL is the responsibility of the entity with zoning authority over the property in question (e.g., the City of Ridgecrest). As indicated in Sections 3.2 and 4.2 of the EIS/LEIS, the presence of residential development in areas where the DoN would discourage or strongly recommend against such development represents a baseline condition with respect to the DoN's Proposed Action. The Proposed Action increases Noise Zone II in some areas while decreasing it in others for a net decrease of 2.3%. The change in noise experienced by residents of these areas is not expected to be perceptible. Therefore, the existing mitigation measures for implementing land use management programs, as developed in the past through close coordination between the city, county and NAWSCL, are still valid under the Proposed Action.
2.2	27-12	Rajtora, S.	NAWSCL acknowledges creating an adverse	A determination as to what constitutes an approved

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			impact, but is doing nothing to mitigate the impact. There is no analytical basis for stating this adverse impact is unavoidable. NAWSCL would energetically fight any residential land development in an area above 70dB, or at a minimum, insist on costly construction enhancements that would be of no value outdoors. NAWSCL needs to expend the same energy protecting the existing developed land.	land use on property in the vicinity of NAWSCL is the responsibility of the entity with zoning authority over the property in question (e.g., the City of Ridgecrest). As indicated in Sections 3.2 and 4.2 of the EIS/LEIS, the presence of residential development in areas where the DoN would discourage or strongly recommend against such development represents a baseline condition with respect to the DoN's Proposed Action. The Proposed Action increases Noise Zone II in some areas while decreasing it in others for a net decrease of 2.3%. The change in noise experienced by residents of these areas is not expected to be perceptible. Therefore, the existing mitigation measures for implementing land use management programs, as developed in the past through close coordination between the city, county and NAWSCL, are still valid under the Proposed Action.
2.3	27-13	Rajtora, S.	The EIS/LEIS needs to investigate noise mitigation resulting from moving all departures to the center of the Navy controlled departure corridor (see route 21D2).	VFR departures have already been moved to a single departure corridor. As discussed in the 2011 AICUZ Update, actual flight paths over the ground will vary within the corridor. The multiple departure paths displayed in the 2011 AICUZ Update were a means to provide a more accurate computer modeling of noise contours that took all variations into account.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
2.4	27-14	Rajtora, S.	States that since no data was given regarding the utilization of the twelve different routes it is impossible to determine what was modeled or what the impact might be. The EIS/LEIS needs to justify increasing adverse noise levels on private land for no real benefit.	The flight route utilization data for each modeled aircraft were collected through intensive interviews and validation process with the aviation staffs and the pilots. This data was then used for developing both existing and proposed condition noise contours. Detailed utilization data are included in the 2011 AICUZ Update reference document produced by Wyle Laboratories in February 2010 entitled Draft Aircraft Noise Study for Naval Air Weapons Station China Lake, California. The 2011 AICUZ Update modeled 12 different flight routes to capture the variability within the VFR departure corridor. Noise levels are a function of flights executed pursuant to NAWSCL's mission requirements.
2.5	27-15	Rajtora, S.	The EIS/LEIS needs to justify the benefit to NAWSCL of modifying route 14D3 between the 2007 AICUZ Study and 2011 AICUZ Update versus the harm to the public.	The departure route has not been modified. The modeling has simply been refined. As summarized in the EIS/LEIS, the 2011 AICUZ Update model improves accuracy in predicting noise exposure in several ways. As compared to the 2007 AICUZ Study, the increase in number of dispersed flight tracks including flight track 14D3 is the means to refine the model to more accurately represent the noise conditions around NAWSCL.
2.6	27-16	Rajtora, S.	Neither the 2011 AICUZ Update nor the DEIS/LEIS discusses the basic need for route 14D3 and that the best way to handle the resulting noise problem would be for the aircraft utilizing route 14D3 to be switched to route 14D1.	Flight route 14D3 is a departure track for flight operations departing runway 14 that may not be able to conform to the 14D1 departure route, particularly during months with higher temperatures (May through September). High temperatures degrade aircraft performance to the point that heavily loaded aircraft and some larger aircraft may not be able to turn west as sharply as necessary to follow the 14D1 flight route, and would instead follow a flight path shown as 14D3.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
2.7	27-17	Rajtora, S.	Recommendation that the EIS/LEIS develop criteria regarding the criticality of a particular flight before a downgraded performance aircraft is allowed to depart over private land.	The defined flight tracks are based on a combination of various factors such as mission and pattern requirement, flight destination, weather and traffic conditions and aircraft types and all are optimized to minimize noise impact on sensitive land uses, etc. Although flights over private land cannot be avoided, all are well within Federal Aviation guidelines with respect to Special Use Airspace minimum altitudes over populated areas. The DoN remains committed to balancing mission requirements while minimizing noise impacts around the airfield, as doing so is fundamental to establishing current flight tracks at NAWSCL.
2.8	27-18	Rajtora, S.	Neither the 2011 AICUZ Update nor the DEIS/LEIS gives an indication regarding the frequency of use for route 14D3. The LEIS needs to provide a thorough treatment of route 14D3 regarding benefit to NAWSCL versus detriment to the public. A detailed discussion of event frequency needs to be included.	Detailed operations and utilization data are provided in the 2011 AICUZ Update reference document produced by Wyle Laboratories in February 2010 entitled Draft Aircraft Noise Study for Naval Air Weapons Station China Lake, California. Route 14D3 is not discussed separately within the EIS/LEIS as it represents a potential departure variation from Runway 14, which is encompassed in the analysis of the 2011 AICUZ Update.
2.9	27-19	Rajtora, S.	Neither the 2011 AICUZ Update nor the DEIS/LEIS contains a good discussion relative to the prevailing winds and the utilization of Runway 21 versus Runway 14. Based upon data taken from the 2011 AICUZ Update, the 2007 AICUZ Study projected Runway 14 to be used just over one thousand times. Now the 2011 AICUZ Update projects Runway 14 to be used just over twenty-five hundred times. Why has this dramatic change in runway utilization been adopted? How much of the change is the result of a change to the prevailing winds, and how much is the result of other factors? The basis for the projected departure frequency of both Runway 14 and	Changes in runway utilization were documented in the 2011 AICUZ Update and based on aircrew and airfield staff interviews. Runway departure data is retained for six months only. The 2011 AICUZ Update data can be found on the project website, www.chinalake LEIS.com. Noise levels are a function of flights executed pursuant to NAWSCL's mission requirements.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			Runway 21 needs to be reviewed. The review should include actual departure data over the last twenty years. The EIS/LEIS needs to justify increasing the already adverse noise impacts over private land.	
2.10	27-20	Rajtora, S.	The Navy should modify flight routes to fly further south before turning east or west to minimize noise impacts to property values, unless there is quantifiable reduction in operational capability.	Given aircraft altitude at the distance where a turn is made, noise effects are already minimized. Flying further south would have little to no effect to the Noise Zone II 65 dBA contour boundary around the turning areas.
2.11	27-21	Rajtora, S.	States that the lack of information on all routes (12 or 36) makes it impossible to understand the modeling behind the AICUZ Study footprint. Request that the EIS/LEIS include all the data that the 2011 AICUZ Update left out so that the results and conclusions can be understood. The EIS/LEIS should not only describe the allocation of aircraft to routes, but also the reasoning behind the allocation.	Detailed allocation of aircraft flights to individual flight tracks can be found in the 2011 AICUZ Update reference document produced by Wyle Laboratories in February 2010 entitled Draft Aircraft Noise Study for Naval Air Weapons Station China Lake, California. Such allocation was determined based on current operational requirements.
2.12	27-22	Rajtora, S.	States that the 2007 AICUZ Study documented two specific procedures designed to reduce public noise. One of those procedures (see page 5-14) was called the Runway 21 Noise Abatement Procedure. If this procedure was helpful for mitigation in the 2007 AICUZ Study, the EIS/LEIS needs to explain why it would not be equally useable now. The F-35 is having a difficult time gaining acceptance in eastern state towns. Modified profiles have been created to reduce noise. Why has NAWSCL decided to ignore the problem? Numerous opportunities exist whereby NAWSCL could demonstrate initiative relative to noise mitigation. NAWSCL needs to perform due diligence.	The 2007 realignment and consolidation of departure flight tracks was implemented specifically to reduce noise impacts. Accordingly, unless operational conditions dictate otherwise, airfield departures are executed to avoid overflight of populated areas. Aircraft power settings are dictated by operational/take off conditions.
2.13	27-23	Rajtora, S.	Recommendation to consider the Nighttime Noise Abatement Procedure included in the 2007 AICUZ	A minority of Armitage Airfield Operations occur at night. On occasions when night-time operations are

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			Study to reduce noise impacts or explain why the procedure would not work for the EIS/LEIS.	necessary for the mission, standard departure procedures identified in the NAWSCL AICUZ Study are followed.
2.14	27-24	Rajtora, S.	Ridgecrest's location south of the NAWSCL airfield is an ideal location to avoid noise impacts from departing aircraft. Straight out departures from the two primary departure runways, Runway 21 and 14, skirt the city borders and the departure noise has little or no impacts on residents. Request the EIS/LEIS study the down side of this approach and document specifically any safety or operational limitation imposed by this approach. All detrimental impacts need to be quantified and prioritized against the noise and safety benefit to the local civilians. The EIS/LEIS needs to demonstrate with sound arguments why it will not work.	Straight out departures from either of these runways would actually exacerbate noise effects by putting aircraft over populated areas earlier in the climb out gradient. This is undesirable specifically due to noise concerns. The current departure flight paths keep the aircraft within the NAWSCL boundary for a longer period of time and reduce the off-base Noise Zone III to the minimum. As shown in Figure 4.2-1, given the close proximity of Runway 14 to dense residential parcels, schools, and hospitals, particularly in the City of Ridgecrest south of Runway 14, a straight departure flight path will result in increased noise impacts. Additionally, a straight out departure on Runway 14 would directly conflict with Instrument arrival (TACAN) traffic and would introduce unacceptable risk to flight safety. Straight out departures from Runway 21 would result in the overflight of unincorporated China Lake Acres and create a potentially increased noise exposure for residents of that area.
2.15	27-25	Rajtora, S.	Request that the EIS/LEIS include a standard needs assessment as the basis for future projections for frequency of runway departures. The EIS/LEIS needs to document the past data on which future projections are based and provide some logic regarding projected growth based on that data. Does the total number of departures need to increase to the level proposed, and does the number of departures from Runway 14 need to increase to twenty-five hundred.	The future departure runway usage data were developed based on existing flight data and the anticipated new aircraft fleet mix associated with changes required for various mission conditions and flight parameters. The 2011 AICUZ Update and its reference documents provide the basis for the forecasts.
2.16	27-26	Rajtora, S.	The mitigation measures proposed in Section	The EIS/LEIS is prepared for purposes of evaluating

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			4.2.2.2 appears to be limited to land use management efforts. The EIS/LEIS does not address the Navy MIA relative to noise or at all. Recommendation that safety mitigation should be addressed in Section 4.10 and that the noise mitigation measures in Section 4.2.2.2 need to be specific to noise mitigation or need to reference specific sections or paragraphs of the 2011 AICUZ Update that specifically address noise mitigation.	potential impact significance from the Proposed Action. As indicated in Sections 3.2 and 4.2 of the EIS/LEIS, significant noise impacts are a baseline condition. Sections 3.10 and 4.10 of the EIS/LEIS, address safety concerns related to aircraft operations and reflect safety mitigations presented in the 2011 AICUZ Update.
2.17	27-27	Rajtora, S.	States that the EIS/LEIS needs to mitigate increased noise levels, or the Navy should pay compensations to the landowners for diminished use of property. The verbiage in the DEIS/LEIS on page 3.2-9 regarding residential construction or development be discouraged is a clear case of taking.	The text on Page 3.2-8 refers to the City of Ridgecrest's noise compatibility guidelines and their effect on land use decision making to avoid noise impacts. Land use decisions such as zoning requirements for new construction are made by local governments. Any discussion about the impact of those decisions on private property is outside the scope of this EIS/LEIS.
2.18	25-8	Kelso, R.	States that the objective of the NAWSCL safety program should be to avoid killing even one human life as the result of flight operations. The 2007 AICUZ Study, the 2011 AICUZ Update, and the DEIS/LEIS by reference indicate the NAWSCL safety objective is to limit the number of civilian fatalities via population density control. That strategy is flawed since it ignores the fact that Ridgecrest is already highly populated. The Navy pays hundreds of million dollars to design, develop, and install ejection seats in aircraft so not so much as one Navy personnel is killed given there is a crash. NAWSCL needs to adopt the same attitude toward civilian lives.	The DoN is committed to protecting public safety. Safety concerns are paramount to DoN RDAT&E operations as indicated in Sections 3.10 and 4.10 of the EIS/LEIS.
2.19	11-2	Butler, D. and R.	Request for explanation as to why noise levels appear to be increasing in residential areas near the Faller Public School.	The Proposed Action could result in a slight increase in noise along departure routes, including areas near the Faller Public School. Any such slight increase in noise would primarily be due to the 25 percent tempo

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				increase and the change in fleet mix.
2.20	8-13	Brashear, M.	Noise should only be an issue if it regularly impacts a school or hospital and, if that is the case, then flight paths should be moved slightly east or west to correct the problem. It is not the responsibility of the Navy to control property values via overflight routes.	Based on Figure 4.2-1 shown in the EIS/LEIS, shifting departure flight tracks slightly towards the east would result in more schools likely having greater impacts and a greater number of residences in China Lake Acres would be within Noise Zone II. County noise compatibility criteria consider noise impacts on land uses.
2.21	7-4	Blackwell, J.	The Draft EIS/LEIS has not adequately addressed noise descriptors; decibel scales; decibel values; applicability with plans, policies, and regulations; federal criteria and standards, state criteria and standards; local criteria and standards for San Bernardino County, Kern County, and the City of Ridgecrest; and vibration.	Both Chapter 3.2 and Appendix I provide discussions on noise descriptors and information that are related to aircraft noise for which local ordinance does not address. With respect to vibration caused by both weapon testing and aircraft overflight, the discussion can be found in Section 3.2 of the EIS/LEIS. References and standards used to develop the analysis are provided in Appendix I of the EIS/LEIS.
2.22	7-5	Blackwell, J.	The EIS/LEIS must say if there is a noise element of the Kern County and San Bernardino County General Plans that identifies noise-sensitive land uses for residential uses, schools, hospitals, rest homes, long-term care facilities, mental care facilities, libraries, places of worship, and passive recreation uses.	Information on noise elements of the Kern County and San Bernardino County General Plans can be found in the Kern County: Airport Land Use Compatibility Plan (Page 3-2) and the San Bernardino County Development Code (Chapters 82.09 and 82.18).
2.23	7-6	Blackwell, J.	The EIS/LEIS must identify if Kern County and San Bernardino County have adopted land use compatibility criteria as part of the noise elements of their respective County Land Use Plans.	A discussion of the Kern County and San Bernardino County have adopted land use compatibility criteria as part of the noise elements of their respective County Land Use Plans is provided in Section 3.2.4 of the EIS/LEIS.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
2.24	7-7	Blackwell, J.	The EIS/LEIS must identify if the noise elements of the San Bernardino and Kern County General Plans identify preferred noise standards for stationary noise sources that affect residential land uses.	No new stationary noise sources are proposed in the EIS/LEIS. Discussion of adoption of particular County noise standards is outside the scope of the EIS/LEIS.
2.25	7-8	Blackwell, J.	The EIS/LEIS must summarize Caltrans criteria to assess ground-borne vibration impacts through human response or structural damage (Caltrans references 2002 and 2004). The DEIS must analyze the peak particle velocity in inches/second to determine if thresholds will be exceeded, especially as a result of transient and/or continuous/frequent sources in all areas and airspace proposed for use by the Department of the Navy.	The only sources that would cause ground-borne vibration impacts in NAWSCL are those live explosive detonations occurring during live fire range events. However, given the distance from these firing and impact areas in each applicable range from off-installation structures, the ground-born vibration impact is negligible as discussed in Section 4.2 of the EIS/LEIS. Caltrans's reference is not applicable to aircraft in airspace-generated airborne vibration for which no criteria have been established as stated in Section 4.2 of the EIS/LEIS.
2.26	7-9	Blackwell, J.	The EIS/LEIS must include consideration of ground-borne vibrations. The following land uses are typically identified by the noise element in a county land use plan as being vibration-sensitive: hospitals, residential areas, concert halls, libraries, sensitive research operations, schools, and offices.	The only sources that would cause ground-borne vibration impacts in NAWSCL are those live explosive detonations occurring during live fire range events. However, given the distance from these firing and impact areas in each applicable range from off-installation structures, the ground-born vibration impact is negligible as discussed in Section 4.2 of the EIS/LEIS.
2.27	7-10	Blackwell, J.	The EIS/LEIS must consider noise and vibration mitigation including the following: • Restrict placement of sensitive land uses in proximity to vibration-producing land uses, and • Prohibit exposure of residential dwellings to ground vibration from trains that would be perceptible on ground or second floors. (Comment also listed under Mitigation	The potential airborne vibration impact caused by supersonic flight events is discussed in Section 3.2 and indicates that potential vibration impacts along the flight paths are currently within the installation boundaries. Therefore, the need for vibration impact mitigation is not warranted. However, the point is noted and NAWSCL will address it if such an issue would occur in the future. Train operations do not occur at NAWSCL.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			Measures).	
2.28	15-6	Goforth K.M.	The EIS/LEIS should discuss noise monitoring to verify the accuracy of modeled noise impacts, or commit to monitor noise levels at the NAWSCL perimeter near Armitage Airfield.	The noise environment at NAWSCL was modeled using the NOISEMAP software suite. To produce the CNEL contours, NOISEMAP uses a library of actual aircraft noise measurements, adjusted to local meteorological conditions, to produce noise contours based on an average annual day of operations. NOISEMAP represents the best noise modeling science available today for military airfields. NOISEMAP has been validated through extensive study (Lunberg 1991, Speakman 1989, Lee 1982, Seidman and Bennett 1981, Rentz and Seidman 1980, Bishop et al. 1977, and Dundordale et al. 1976). NOISEMAP is used by DoD and other federal agencies to model noise exposure at and around military airfields for noise associated with aircraft flight operations, aircraft run-up activities, and on-ground testing.
2.29	24-12	Merk, S.	States that the 2011 AICUZ Update indicates Runway 14 is used when Runway 21 is not available. Runway 21 is designed for safe operation under high usage including the development of an APZ1 and an APZ2. If Runway 21 is expected to be unavailable more than infrequently, departure operations from runway 14 need to be reassessed including the development of an APZ 1 and an APZ 2. Runway 14 does not automatically acquire runway 21 safety attributes simply by becoming the primary runway. The planned role for Runway 14 over the next 25 years needs to be discussed.	No change is planned for using Runway 14 beyond what is described in the 2011 AICUZ Update. Runway 14 does not have APZs because it does not meet the minimum annual operations for which APZs would be required. Furthermore, if Runway 14 had APZs, they would be within the confines of NAWSCL.
2.30	12-30	Clark, J.	*Identification of areas of frequent noise complaints* - Provide a map and table in the EIS/LEIS which shows the areas and times associated with frequent noise complaints.	Table outlining noise complaints has been added to Section 3.2.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
2.31	12-31	Clark, J.	States concerns with the 2011 AICUZ Update. The EIS/LEIS states that the "compatibility of NAWSCL activities with off- installation land use is addressed in the Update of the AICUZ Study (U.S. Navy 2011)". While the pattern of such flights would remain consistent, tempo may increase. Future noise contours must be mapped and incorporated directly into the EIS/LEIS for each alternative. Section 3.2 of the EIS/LEIS lays out the "recommendations" from the 2011 AICUZ Update. The Department of Navy should identify which of these recommendations will be adopted.	The DoN has implemented or plans to implement all recommendations of the 2011 AICUZ Update (NAWSCL AICUZ Update page 7-7, paragraph 7.3.1) for NAWSCL action. Future noise contours are incorporated into the EIS/LEIS by reference to the 2011 AICUZ Update.
2.32	15-1	Goforth K.M.	Since the EIS/LEIS does not include new mitigation measures for noise in the proposed alternative, EPA recommends that the discussion be included in the Final EIS/LEIS per NEPA requirement to discuss mitigation (40 CFR 1502.16(h)). The FEIS should discuss specific mitigation measures of significant adverse noise impacts of the proposed alternative.	Existing mitigation measures implemented through land use management programs as developed in the past through close coordination between the city, county, and NAWSCL would be applied to the Proposed Action. Section 4.2.2.2 and Table ES-3 of the EIS/LEIS provide discusses mitigation measures for significant adverse noise impacts of the Proposed Action.
	15-2	Goforth K.M.		
	15-4	Goforth K.M.		
2.33	27A-3	Rajtora, S.	NAWSCL must explain the desire to increase operational tempo and NAWSCL must perform due diligence relative to noise mitigation in conjunction with both the current and increased tempo operations.	Please see response to comment 2.32. Any increase in operational tempo would be pursuant to corresponding increase in mission requirements.
3. AIR QUALITY				
3.1	7-1	Blackwell, J.	The air quality analysis did not address all state and national ambient air quality standards applicable in California.	The EIS/LEIS addresses the concerns relevant to the NAAQS or CAAQS from the Proposed Action in a relative manner that is common in a federal NEPA process through the following: 1) Providing existing background levels with respect to the NAAQS and CAAQS in Table 3.3-3, which

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				shows air quality conditions for criteria pollutants around NAWSCL. Determining the potential emissions increases that might result from implementation of the Proposed Alternative. In doing this, we used the emissions significance measure established in the Clean Air Act General Conformity Rule. Specifically, if a federal action would not result in an emissions increase that is greater than the *de minimis* threshold (in this case, 100 tons and 70 tons per year are applicable to PM_{10} emissions depending on where emission increase would occur), it is presumed that the Proposed Action would not (i) cause or contribute to any new violation of any standard in any area; (ii) increase the frequency or severity of any existing violation of any standard in any area; or (iii) delay timely attainment of any standard or any required interim emission reductions or other milestones in any areas. 2) The potential attainment pollutant effects were determined using the "major stationary source" definition (250 tons per year or more of any attainment air pollutant subject to regulations under the CAA) from the EPA Prevention of Significant Deterioration (PSD) program. The threshold triggering a PSD program is used as the criteria for locations that are in attainment for determining the potential significance of air quality impacts. If the attainment pollutants emissions from the Proposed Action are below this threshold, potential air quality impacts for that pollutant can be considered not significant and no further analysis to make a direct comparison of the actual NAAQS or CAAQS in terms of concentration levels for each attainment pollutant is warranted.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				The above relative air quality impact analysis methodologies for the Proposed Action and alternatives have been adopted in many large scale federal actions that do not involve any construction of major stationary combustion facilities and are considered sufficient in determining the air quality impact significance with respect to the NAAQS or CAAQS to meet NEPA requirements. Table 4.3-1 summarizes the estimated pollutant emissions as a result of the Proposed Action and compares with the relative air quality impact thresholds to determine potential impact significance. Appendix G details the analysis methodologies, procedures, and results. Additionally, as indicated in Section 3.3 of the EIS/LEIS, for those non-criteria pollutants for which CAAQS are available, negligible to no emissions would be generated from the Proposed Action. Consequently, the Proposed Action would not have a measureable impact on the ambient concentrations of those pollutants.
3.2	7-2	Blackwell, J.	Request that the Draft EIS/LEIS identify if the Mojave Desert Air Quality Management District has adopted other regulations that affect facility construction and operation, such as dust control measures for large operations that disturb large amounts of land.	Dust control requirements in the Mojave Desert Air Quality Management District (MDAQMD) are contained in district rules 403, 403.1, and 403.2. In compliance with these rules, NAWSCL implements an extensive set of fugitive dust control measures for all construction, demolition, and earth-moving activities. MDAQMD has not adopted any other regulations related to dust control from facility operations.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
3.3	7-3	Blackwell, J.	The EIS/LEIS does not adequate address conformity with the Clean Air Act until it demonstrates consistency with the State Implementation Plan (SIP).	Section 4.3 of the EIS/LEIS sufficiently addresses the Clean Air Act General Conformity Rule requirement and provides an estimate of incremental nonattainment pollutant emissions from the Proposed Action as compared to the baseline conditions. These emissions are below *de minimis* levels; therefore, a formal Conformity Determination is not required.
3.4	12-33	Clark, J.	*Potential air quality impacts* - It is not substantiated to conclude that air quality impacts would not increase over the baseline. It seems likely that increased tempo of military activity could lead to an increase.	Section 4.3 of the EIS/LEIS specifies that emissions under the Proposed Action would be greater than baseline conditions; Proposed Action emissions are also quantified in Section 4.3 of the EIS/LEIS.
3.5	18-16	Howell, J.	The air quality section fails to evaluate whether the action and alternatives would be subject to New Source Performance Standards.	No new stationary sources regulated by New Source Performance Standards are proposed under the Proposed Action.
3.6	18-17	Howell, J.	The air quality section fails to evaluate whether the action and alternatives would be subject to National Emissions Standards for Hazardous Air Pollutants.	No new stationary sources regulated by the National Emissions Standards for Hazardous Air Pollutants are proposed under the Proposed Action.
4. BIOLOGICAL RESOURCES				
4.1	8-2	Brashear, M.	Expression of gratitude for consideration of the possibility of antelope on NAWSCL.	Comment acknowledged.
4.2	8-7	Brashear, M.	Concern for burros on base and the planned sanctioning removal of all burros, since burros have historically been present. Support for burro removal if bighorn sheep are present in those areas.	Burros are managed in accordance with NAWSCL's INRMP and the Free Roaming Horse and Burro Act. Burros are impacting big horn sheep populations on the North and South Ranges.
4.3	8-11	Brashear, M.	Recommendation that mountain lions should be removed from the list of species of concern on the base.	Based on information within the NAWSCL INRMP, low numbers of mountain lions are known to be present on the North Rage. Because of their low numbers, NAWSCL does not consider mountain lions to be sufficiently abundant on the Installation to warrant

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				removal from the species of concern list.
4.4	8-12	Brashear, M.	Concern that burro removal will lead to decimation of bighorn sheep by mountain lions.	Please see response to comment 13.57.
4.5	25-15	Kelso, R.	Request to provide the Draft Recovery Plan USFWS 1993 for the desert tortoise referenced in the section and most recent document if one exists.	The May 6, 2011 desert tortoise recovery plan is available on the project website at www.Chinalake LEIS.com as well as on the USFWS website.
4.6	25-16	Kelso, R.	Request clarification regarding the statement that the conservation strategy included in the 1993 Draft Recovery Plan for the desert tortoise is based upon the best available information gathered and analyzed information for the last 20 years. Question of whether the 1993 Plan is the best source for recovery planning.	The USFWS 1993 recovery plan was referenced because it was used as the basis for the federal designation of the Desert Wildlife Management Areas and, subsequently, desert tortoise critical habitat. The EIS/LEIS is not a species recovery planning document; any coordination by NAWSCL regarding species recovery would occur through discussions with the USFWS, separate from the NEPA process. The DoN is aware of and is using the May 6, 2011 desert tortoise recovery plan.
4.7	25-17	Kelso, R.	Request clarification on the difference between the formal fire management policy and the fire management strategy currently in place, information on how the strategy is funded, executed, and to which ranges it applies.	Section 3.4.10 of the EIS/LEIS has been revised. Currently, the Installation does not maintain a formal fire management policy but has developed fire management measures that support the NAWSCL mission, while taking natural resource protection into consideration. Available information regarding past fires on NAWSCL has also been incorporated into Section 3.4-10 of the EIS/LEIS.
	24-16	Merk, S.		
4.8	15-12	Goforth K.M.	The EIS/LEIS should include a year-by-year estimate for acres of critical habitat burned and an accompanying discussion of facility operational changes that may have impacted the fires.	Available information regarding fire occurrences on NAWSCL (i.e., acres burned) since 1998 has been incorporated into Section 3.4.10 of the EIS/LEIS.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
4.9	15-14	Goforth K.M.	The EIS/LEIS should include historic and current population estimates for threatened and endangered species at NAWSCL. The EIS/LEIS should also report take, mortality, and harassment, of endangered species by year.	Due to the large size of NAWSCL, Station-wide population size/trend studies for threatened and endangered species have not been conducted on a recent basis. Surveys are conducted in and around project sites on a case-by-case and as-needed basis but do not allow for a comprehensive assessment of listed species population status. Region-wide data on the status of towhees and tortoises should be available in recovery plan and species status reviews prepared by the U.S. Fish and Wildlife Service.
4.10	24-7	Merk, S.	Under 3.4.8 Riparian and Other Water-Related Habitats, line 22, Insert "Water is currently extracted for domestic use from Coso Cold Spring for the Darwin Community."	Text in Section 3.4.8 has been revised to clarify that water is currently extracted for domestic use from Coso Cold Springs for the Darwin Community.
4.11	24-15	Merk, S.	The "Draft Recovery Plan" USFWS 1993 for the desert tortoise referenced on page 3.4-19 is not the most recent document. There is a Revised Recovery Plan for the Mojave Populated Desert Tortoise (May 6, 2011) that is not mentioned. Why is NAWSCL considering a draft plan that is twenty years old the best source for recovery planning?	The USFWS 1993 recovery plan was referenced because it was used as the basis for the federal designation of the Desert Wildlife Management Areas and, subsequently, the designation of desert tortoise critical habitats. The EIS/LEIS is not a species recovery planning document; any coordination by NAWSCL regarding species recovery would occur through discussions with the USFWS, separate from the NEPA process. The DoN is aware of and is using the May 6, 2011 desert tortoise recovery plan. Additionally, NAWS China Lake is now operating under the provisions of a recently updated Biological Opinion issued by the U.S. Fish and Wildlife Service in February 2013.
4.12	18-10	Howell, J.	The EIS/LEIS must quantify the habitat types and provide estimates by type for the amount of habitat lost or adversely affected.	Available information regarding impacts and habitat types has been provided in Sections 3.4 and 4.4.
4.13	18-11	Howell, J.	The EIS/LEIS must consider and show the measures to protect, restore and enhance wildlife	Throughout Section 3.4 of the EIS/LEIS, there are discussions on the various programs and agreements

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			habitat.	in-place to protect, restore, and enhance wildlife habitat for specific species (e.g., the Terms and Conditions of the various USFWS Biological Opinions for Mohave Tui Chub and Desert Tortoise, as well as the Cooperative Management Agreement for the Inyo California Towhee). The measures for general wildlife habitats (e.g., the measures described and referenced in the INRMP) are also discussed in Section 3.4.
4.14	12-16	Clark, J.	The EIS/LEIS has not acknowledged, nor has it analyzed, the public scoping issue associated with habitat fragmentation. The same is true for your analysis of impacts to riparian habitat for flycatchers, vireos and towhees.	Since 1943 only (approximately) eight percent of Station lands have been developed and most of the land disturbing activities remain concentrated in the Mainsite and airfield areas. Weapons testing and evaluation efforts are concentrated in existing target areas and typically do not result in new surface disturbances. The vast majority of China Lake lands are intact and not subject to routine disturbance. No test or target sites are located in or adjacent to riparian areas. Habitat fragmentation is not considered to be a significant source of adverse impacts to listed or protected species at NAWSCL as a result of implementation of the Proposed Action.
4.15	12-17	Clark, J.	*Impacts on flora and fauna, especially threatened and endangered* species - In the Final EIS/LEIS, please lay out your specific needs, plans and potential availability of funding for additional focused plant and animal species surveys of the target and test sites, and associated buffers, to better define the distribution and density of federally listed threatened and endangered species, other federally protected species, and NAWSCL-special status species.	NAWSCL receives allocations for these types of surveys and applies these funds to the areas as the funding is approved. Surveys are conducted on a case-by-case for project support, taking into consideration project-specific situations and characterization of existing ground conditions for general stewardship purposes. Situations and parameters that trigger survey requirements must be defined.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
4.16	12-18	Clark, J.	The Draft EIS/LEIS presents an unsubstantiated conclusion (based on a USAF study) that aircraft noise would not impact desert tortoise. Noise from aircraft overflights, ordnance delivery, or other military activities can disturb wildlife.	The analysis for noise impacts on desert tortoises has been incorporated into the Section 7 consultation process between the DoN and the USFWS. The DoN considers the USAF study to be a valid analysis to determine that military overflight activities do not adversely affect desert tortoise or desert wildlife. The USFWS issued a Biological Opinion in February 2013, which is included in Appendix H of the EIS/LEIS.
4.17	12-19	Clark, J.	*Consideration for the reintroduction of antelope on the Installation* - This issue raised during scoping has not been mentioned or addressed in the Draft EIS/LEIS.	The focus of the EIS/LEIS is to address the anticipated effects of land withdrawal renewal and potential mission increase, which do not include reintroduction of antelope.
4.18	12-20	Clark, J.	*Consideration for partnerships to maintain guzzlers for wildlife on the Installation* - This issue raised during scoping has not been mentioned or addressed in the Draft EIS/LEIS.	Guzzlers have been installed and maintained on NAWSCL in the past. However, guzzlers are not addressed in the EIS/LEIS is its focus is on addressing the anticipated effects of land withdrawal renewal and potential mission increase. Installation of guzzlers is addressed in the NAWSCL INRMP.
4.19	12-21	Clark, J.	*Consideration of options for the management of wild* horses *and burros* - The Wild Horse and Burro Management Plan (WHBMP) should be included as an appendix or provided on-line for accessibility by the public. Carrying capacity should be clearly spelled out in the Final EIS/LEIS, as well as what constitutes "excess numbers" which would trigger removal operations.	The Wild Horse and Burro Management Plan has been made available to the public on the project website at www.chinalakeleis.com, and has been incorporated in the 2014 INRMP update.
	16-3	Goss, K.		
4.20	18-18	Howell, J.	The EIS/LEIS should include the results and conclusions of consultation with the USFWS.	The conditions of the 2013 Biological Opinion have been incorporated into Section 4.4 of the EIS/LEIS, and a copy of the Biological Opinion has been included as Appendix H.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
4.21	18-19	Howell, J.	The EIS/LEIS should analyze the impacts of the action on biodiversity of the affected ecosystem, including genetic diversity and species diversity.	The methodology and evaluation criteria for biological resources follow standards established by the military for other NEPA documents for projects of similar scope. To investigate project effects on variables such as genetic diversity would require large-scale scientific studies that would not be economically feasible. Section 4.4 of the EIS/LEIS includes the analysis of potential project impacts on wildlife movement, as well as potential effects on the sustainability of species populations.
4.22	15-13	Goforth K.M.	In consultation with the USFWS, the Navy should consider additional mitigation measures to reduce the increased fire risk to critical habitat in Superior Valley.	The DoN will comply with the 2013 Biological Opinion, which stipulates measures to reduce fire risk to critical habitat. Continued implementation of the avoidance and minimization measures associated with the NAWSCL fire management strategy remains a primary management goal of both the INRMP and CLUMP. These measures, outlined in Section 3.4.10 Fire Management, have been developed to ensure mission objectives are achieved, while taking into consideration the protection and conservation of natural resource values. To reduce the effects of fire on natural resources, under the Proposed Action, NAWSCL would establish fire-fighting equipment access roads (which may provide some utility as a fire break) on an as-needed basis, in support of fire suppression capabilities around targets. The DoN would continue to use existing targets, operating areas and the existing road network to determine where additional access roads may be effective to help suppress fires and prevent them from spreading into roadless (including vegetated/habitat) areas. The DoN would also attempt to use areas naturally devoid of vegetation, including natural barriers such as washes and lava flows or existing roadways in order to minimize construction and maintenance costs and

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				impacts to native species. The effectiveness of the fire management measures would continue to be reviewed on an ongoing basis by NAWSCL in accordance with the adaptive fire management procedures contained in the 2013 BO (8-8-12-F-29). The measures would be refined as necessary to ensure they remain effective to sustain the Installation's mission, and protect and conserve natural resources.
5. CULTURAL RESOURCES				
5.1	35-1	Native American Heritage Commission	Identification of a need for formal Tribal consultation, compliance with related federal regulations, and documentation of Tribal concerns within the EIS/LEIS.	Tribal consultation is addressed in Sections 1.6.1 of the EIS/LEIS. NAWSCL has been engaged in discussions with eight federally recognized and three non-Federally recognized Tribes with ethnographic ties to the lands currently managed by the Installation. These discussions began during the scoping process for the EIS/LEIS and have continued. In compliance with existing federal laws, regulations, and Executive Orders, NAWSCL consults federally recognized Tribes and coordinates with non-federally recognized Tribes (with permission) on projects with the potential to impact Native American cultural properties. Additionally under an existing agreement the Tribes have access to the Coso Hot Springs, an area of cultural significance. NAWSCL also has provided access to any area of the Installation whenever and wherever there are no safety or security concerns. Tribal concerns are documented through multiple correspondences received by the DoN from the Tribes, in meeting notes associated with various meetings.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
5.2	35-2	Native American Heritage Commission	Confirmation that Native American cultural resources were identified through a Sacred Lands File search.	Native American cultural resources were identified through formal and informal consultations with the eight Federally Recognized Indian Tribes and three non-Federally Recognized Indian Tribes.
5.3	35-3	Native American Heritage Commission	Recommendation to contact the Information Center of the California Historical Resources Information System or State Historic Preservation Office and Native American contacts on the provided list.	Contact with these entities has been conducted. The DoN has consulted with all parties listed, including Tribal and state agencies through formal consultation.
5.4	35-4	Native American Heritage Commission	Recommendation to consider avoidance in instances where cultural resources are discovered.	Avoidance measures are addressed in Section 3.5.4 of the EIS/LEIS. Avoidance is NAWSCL standard practice for land use management and cultural resource management decisions.
5.5	7-13	Blackwell, J.	Information on paleontological resources must be collected in order to classify geologic formations for their potential to contain scientifically important vertebrate or plant fossils, and that this information must be included in the EIS/LEIS.	Sections 3.5 and 4.5 of the EIS/LEIS have been revised to incorporate available information regarding paleontological resources at NAWSCL and the potential effects on the resources from implementation of the Proposed Action and Alternatives.
5.6	7-14	Blackwell, J.	The EIS/LEIS should use the Potential Fossil Yield Classification system and the BLM Manuel to analyze impacts on paleontological resources.	Effects to paleontological resources have been considered in accordance with the 2012 ICRMP. Effects to fossilized vertebrate and plant species are accounted for during cultural resource inventories. NAWSCL has developed relationships with individual paleontologist and institutions that provide expertise in the removal, care, and study of fossils when impacts cannot be avoided. NAWSCL and the DoD have also funded and sponsored two paleontological specific projects. The first analyzed the paleontological value of the Salt Wells Drainage Basin, and the second consisted of an extensive study of paleoenvironmental conditions within China Lake Basin.
5.7	6-2	Vega, B	The Tribe recommends Section 6 of the National Historic Preservation Act as amended be adhered	Section 6 of the NHPA refers to Requirement for Specific Authorization for Projects Under the Historic Sites, Buildings, and Antiquities Act. The DoN

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			to.	interprets that this commenter was referring to Section 106; NAWSCL adheres to the Section 106 process. Tribal consultation is addressed in Sections 1.6.1 of the EIS/LEIS.
5.8	6-3	Vega, B	The Tribe recommends that the existing 1979 Memorandum of Agreement (MOA) be updated and revised; these updates would include Executive Order 13007 (Indian Sacred Sites) May 24, 1996 1st Amendment to the Constitution The American Indian Religious Freedom Act, to name a few.	The DoN is actively engaged with participating Tribes to update the 1979 Access MOA.
	6-8	Vega, B		
5.9	6-5	Vega, B	The preponderance of evidence suggests that the onset of geothermal activity is correlated with; and is the most likely cause for the perceptible change and adverse impact to the Coso Hot Springs.	Geothermal activity/impact is addressed in Sections 3.5.4.4, 3.6.7.2 and 4.5.2.1 of the EIS/LEIS. The Innovative Technical Solutions Incorporated (ITSI) study referenced in the EIS/LEIS determined that no definitive link could be found that identifies geothermal production as the cause of observed physical changes in the Coso Hot Springs starting in 1988. While the 2007 ITSI study does suggest a possible correlation between these observed changes and the onset of geothermal production at Coso in 1987, the study also notes that similar temporal variations (e.g., in temperature and fluid levels) often occur in other hot spring systems that have not been associated with commercial development. Based on this extensive study and the best available science, there is no conclusive evidence that geothermal production has caused the temporal variations observed at Coso Hot Springs. With respect to use of Coso Hot Springs for traditional cultural practices. The DoN continues to provide Tribal access to Coso Hot Springs for purposes of conducting traditional cultural practices.
	6-6	Vega, B		
	6-10	Vega, B		
	5-2	Moose, V.		
	28-2 34-2	Red Owl, T.		
	3-7	Bacock, A.		
	3-9	Bacock, A.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
5.10	5-1	Moose, V.	Correct statement regarding Tribes visiting the Coso Hot Springs since geothermal production began; Tribes have visited the Coso Hot Springs as a sacred place long before there was a United States of America.	Text has been revised in Table ES-2 and Table 2-3. The DoN began recording visits to Coso Hot Springs in the early 1970s. The DoN understands that Tribes have been visiting Coso Hot Springs before the DoN began geothermal production activities.
	28-1 34-1	Red Owl, T.		
	3-1	Bacock, A.		
5.11	5-3	Moose, V.	The EIS/LEIS should have accurate information regarding the historical use of Coso Hot Springs by Native Americans and accurate Tribal perspective on the current condition of Coso Hot Springs.	The DoN's perspective is that historic use of Coso Hot Springs has continued to be available for traditional purposes. The DoN continues to accommodate access. The DoN will provide the reference document (NPS Bulletin 32) that details the methods for determining current conditions. Comments were requested and were provided by Native American Tribes; the DoN has carefully reviewed and considered these comments, which are contained in Chapter 12 of the EIS/LEIS. The DoN is in conformance with regard to making factual corrections in accordance with 40 CFR 1503.1. Section 3.5.2.4 of the EIS/LEIS provides a discussion of the historical use of the NAWSCL area including Coso Hot Springs by Native Americans.
	28-3 34-3	Red Owl, T.		
5.12	5-4	Moose, V.	The EIS/LEIS should note that the MOA referred to as U.S. Navy 1979b was also signed by the Advisory Council on Historic Preservation	Section 3.5.4.4 of the EIS/LEIS discusses the MOA, including signature by NAWSCL, SHPO, and ACHP.
	28-4 34-4	Red Owl, T.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
5.13	5-5	Moose, V.	The language in the Final EIS/LEIS must be changed to reflect the absence of a management plan for Coso Hot Springs.	A Management Plan was developed by the DoN in 1978 and forwarded to multiple Federal and State agencies interested parties and Tribal representatives. The Plan contained information relative to maintaining historic buildings and public visitation. Gaps identified in that plan have been addressed through supplemental documentation which includes the Programmatic Memorandum of Agreement (PMOA), the 1979 Access MOA, and the Sugarloaf Management Plan. The practices within these documents have been incorporated into the 2012 ICRMP.
	28-5 34-5	Red Owl, T.		
5.14	5-6	Moose, V.	The Tribes do not agree that the Hot Springs have been stable since 1993, nor do the Tribes agree that this action will not have impacts to historic properties and cultural impacts.	1993 has been changed to 2002 to conform to Section 3.5.4.4. The text initially stated that conditions at Coso Hot Springs have been stable since 1993 based on the 2007 ITSI study. Based on water level and temperature measurements from the South Pool of the Coso Hot Springs, the ITSI study stated that water levels appeared to be stable by 1989-1990, although the temperatures in the South Pool continued to rise until about 1993. Given that average temperatures have dropped since 2002, the text has been revised accordingly. In stating that conditions (i.e., temperature and water levels) are stable, the DoN is using "stable" as a relative term, within an overall context of continually fluctuating conditions typically associated with geothermal activity. Thus, the DoN agrees with the commenters who note that water temperature and water levels are constantly in flux. Such fluctuation from natural forces over time is consistent with observations of hot springs environments generally. The DoN's impacts analysis indicates there have been no adverse effects to Coso Hot Springs as a result of DoN actions. The ITSI study conducted to assess
	28-6 34-6	Red Owl, T.		
	3-2	Bacock, A.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				observed physical changes at Coso Hot Springs since the onset of geothermal production in 1987 determined that no definitive link could be found that identifies geothermal production as the cause of such changes. The DoN facilitates Tribal access to the springs in order to engage in traditional cultural practices in accordance with the 1979 access MOA. (The DoN is currently in the process of negotiating a revised access MOA with area Tribes.)
5.15	5-7	Moose, V.	The executive summary is in conflict with page 4.5-6 which states that Coso Hot Springs monitoring reports are distributed annually to the SHPO, ACHP, and Native American groups who may have concerns regarding the potential effects of the geothermal development program on the Hot Springs. Those concerns include appreciable change in water temperature and elevation.	The annual reports are distributed, as they are available, to SHPO, ACHP, and Native American groups who may have concerns regarding potential effects of the geothermal development program on Coso Hot Springs. Distribution of annual reports is not mentioned on page ES-18 as the reports are standard operating procedures based on the PMOA and are not considered mitigation measures.
	5-12	Moose, V.		
	28-7 34-7	Red Owl, T.		
	28-12 34-12	Red Owl, T.		
5.16	5-9	Moose, V.	The Tribes comment that there have been adverse impacts at Coso Hot Springs and that the two Memoranda of Agreement signed by the Navy in 1979 regarding protection and use of Coso Hot Springs have been violated.	The Coso Hot Springs were listed to National Register of Historic Places on November 7, 1978. Physical evidence of Native American use dates back to a minimum of 5,000 years. National Register Bulletin 38 defines a Traditional Cultural Property (TCP) as a place that plays a critical role in the “traditions, beliefs, practices, lifeways, arts, crafts, and social institutions of any community, be it an Indian tribe, a local ethnic group, or the people of the nation as a whole”. The Coso Hot Springs clearly fit within that definition. A TCP is generally considered eligible for listing to the National Register because of its association with cultural practices or beliefs of a living community that (a) is rooted in that community's history, and (b) is important in maintaining the continuing cultural identity of the community.
	28-9 34-9	Red Owl, T.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				The term 'adverse effect' is a legal term defined within 36 CFR 800.5 to describe an action undertaken by the Federal Government or funded by the Federal government that alters, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. The 2007 ITSI study was conducted in order to assess the observed physical changes at Coso Hot Springs since the initiation of geothermal development at power plants roughly two miles to the west of the springs. This study found no definitive connection indicating that geothermal production has caused any such observed changes at Coso Hot Springs. In the absence of such a causal link, the DoN cannot agree with comment presented that its actions have resulted, directly or indirectly, in an adverse effect to Coso Hot Springs. With respect to the commenters' second comment presented that the DoN is in violation of existing agreements related to the management of and access to Coso Hot Springs and access agreements—the DoN must respectfully disagree. As discussed above, the DoN has conducted a focused and scientifically-grounded study into the observed physical changes at Coso Hot Springs subsequent to commencement of geothermal production in 1987 (ITSI 2007). Furthermore, the DoN continues to monitor conditions at the hot springs; makes every effort to conduct its activities in the area in accordance with the procedures defined within the 1979 PMOA; continues to provide access to the hot springs consistent with the 1979 access MOA; and finally is actively engaged in negotiating a revised access MOA so as to further

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				facilitate access to the springs for purposes of traditional cultural practices.
5.17	5-10 28-10 34-10	Moose, V. Red Owl, T.	The preservation and management plan promised in the MOA was never developed.	A Management Plan was developed by the DoN in 1978 and forwarded to multiple federal and state agencies interested parties and Tribal representatives. The plan contained information relative to maintaining historic buildings and public visitation. Gaps identified in that plan have been addressed through supplemental documentation. Supplemental documentation includes the PMOA, MOA and development of Sugarloaf Management Plan. These documents have guided the DoN's management of activities at Coso Hot Springs from 1979 to the present. Subsequent to 1979, DoN and DoD policy has been to develop ICRMPs; the 1979 management practices are now incorporated into the 2012 ICRMP. The 2012 ICRMP is now being implemented in practice in accordance with the PA endorsed by the SHPO and the ACHP in Oct 2012.
5.18	5-19 3-10	Moose, V. Bacock, A.	Coso Rock Art National Historic Landmark not depicted on map, map should depict this important area.	Coso Rock Art National Historic Landmark has been added to Figure 3.5-1.
5.19	12-5	Clark, J.	*Impacts from the operation of geothermal facilities located within the project area*- The Final EIS/LEIS must identify the types of mitigation that would be proposed should changes to the surface activity of the Hot Springs occur as a result of geothermal development.	Stated in the Access MOA: "The DoN will request the comments of the Owens Valley Paiute-Shoshone Band of Indians, the California State Historic Preservation Officer and the Advisory Council on Historic Preservation. The Owens Valley Paiute-Shoshone Band of Indians will be afforded 30 working days to comment and the California State Historic Preservation Officer will be afforded 30 working days to comment, these times to run concurrently. If the California State Historic Preservation Officer, the Advisory Council on Historic Preservation, and the DoN cannot agree on actions which would adequately mitigate these effects, the DoN will request

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				consultation with the Advisory Council in accordance with Title 36 of the Code of Federal Regulations, Chapter VIII, prior to undertaking any actions which could reasonably be presumed to result in a further detrimental change in the Springs's activities." The DoN has not determined that its activities have resulted in physical changes in surface activity at Coso Hot Springs, and therefore there has been and continues to be no need to develop mitigation measures with respect to any such changes. If it is determined in the future that DoN activities have in fact resulted in such physical changes at Coso Hot Springs, the DoN will consult with the relevant parties in order to develop appropriate mitigation measures at that time, in accordance with the 1979 PMOA and any successor agreements.
5.20	12-6	Clark, J.	The MOA (U.S. Navy 1979b) is quite dated and may need to be updated based on current technology and other advances.	The DoN maintains that the PMOA continues in its applicability. Our reasoning is that this same document has been incorporated into the NAWSCL 2012 ICRMP. The 2012 ICRMP was subject to inter-agency review and approval, working with the California State Historic Preservation Office and the Advisory Council on Historic Preservation. The 1979 PMOA is currently in effect and is not subject to an expiration date for applied terms and conditions.
5.21	12-7	Clark, J.	*Impacts on the Tribal use of Coso Hot Springs and Prayer Site* - Native American access to the Coso Hot Springs and Prayer Site would continue to be conducted in accord with the existing MOA between NAWSCL and Native American Tribes. Please include this MOA as an appendix in the Final EIS/LEIS. At present, it is not "readily available" to the public so that it can be incorporated by reference.	The Access MOA is an appendix in the 2012 ICRMP and has been made available for public review per request. The Access MOA has been incorporated by reference in the ICRMP.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
5.22	12-8	Clark, J.	*Concern over restricted* access *to petroglyphs* - The EIS/LEIS does not mention this concern that was raised as a significant scoping issue.	The EIS/LEIS addresses access to the petroglyphs (e.g., in Section 3.1.7.3). For safety and security concerns, access to the petroglyphs would continue to be accommodated on a case-by-case basis and by coordinating access with the NAWSCL Public Affairs Office.
5.23	12-9	Clark, J.	*Impacts on archaeological resources during construction* - The Draft EIS/LEIS only acknowledges that the Ridgecrest Solar Power Project involves construction of new facilities which would result in a higher potential for the loss or destruction of archaeological resources. Is this the only construction with such potential?	The Cumulative Impacts section also notes additional projects, and states "Cultural resources impacts from development projects in the region either would be localized, would affect areas appreciably distant from NAWSCL, and/or would not be likely to rise to a level having the potential to contribute appreciably to any cumulatively significant impacts when implemented in combination with the Proposed Action." As discussed in Section 4.5.2.1, the EIS/LEIS identifies projects undertaken by other non–DoN entities that could result in the loss or destruction of prehistoric, Native American, or historic resources (which would include archaeological resources).
5.24	12-10	Clark, J.	*Need for formal Tribal consultation* -The Draft EIS/LEIS mentions "Consultation with the CRPM" but does not acknowledge the plans for formal Tribal consultation other than to say that the consultation process would be initiated if an adverse impact is anticipated. The Final EIS/LEIS must be more clear about how the Tribes would be involved and what exactly are the established NAGPRA procedures to be followed.	The DoN has initiated formal consultation with Native American Tribes. The NAWSCL NAGPRA procedures are published in the 2012 ICRMP and follow those procedures prescribed in the NAGPRA regulations of 43 CFR 10. The text of the EIS/LEIS will be revised to include a citation of 43 CFR 10.
5.25	5-11	Moose, V.	The Tribe comments that actions to mitigate the situation at Coso Hot Springs have not occurred and that the Navy is obligated to cease development of geothermal resources until a mitigation strategy can	The DoN has not made a determination that adverse effects have been identified at Coso Hot Springs from geothermal activities that would require development of mitigation.
	5-13	Moose, V.		
	28-11	Red Owl, T.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
	34-11		been agreed upon.	
	28-13 34-13	Red Owl, T.		The 1979 PMOA maintains its applicability and continues to evidence compliance with Section 106 for DoN activities at Coso Hot Springs.
5.26	3-3	Bacock, A.	Historic properties at the Coso Hot Springs are not being restored as part of the proposed action, and since the structures are falling apart, non-action creates adverse effects.	Restoring structures at Coso Hot Springs is not a specific action under the Proposed Action and alternatives being considered in the EIS/LEIS. Restoration of the structures would occur as a separate action with coordination between Tribal organizations and the DoN. The DoN recognizes its responsibility for maintaining historic structures and is currently developing a plan to manage and stabilize stone structures. The text will be revised to reference development of this plan.
5.27	24A-1	Merk, S.	With only 14% of the landmass being archeologically surveyed, commenter wonders how complete the assessment is.	Approximately 20% of NAWSCL's 1.1M acres is inventoried under the NHPA (including Section 106 and Section 110 surveys). The current cultural resource knowledge set is adequate to address potential impacts in this FEIS as the Proposed Action includes no new land disturbing activities. NAWSCL's ICRMP and associated PA, in concert with the NAWS NEPA Instruction, provide the technical and administrative framework in the Installation's CLUMP to process land use changes over time in a manner that complies with applicable requirements and supports evolving mission requirements.
5.28	24A-3	Merk, S.	There are many historical roads and railways that seem not to be included in this report. They are mentioned in text; however, in the final analysis they seem to have dropped off the chart for historical inclusion.	Available cultural resources information (e.g., surveys, studies, assessment) and the 2012 ICRMP were used in the preparation of the EIS/LEIS.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
5.29	24A-4	Merk, S.	Concern that the Kaisuii Indian Tribes that were acknowledged for using the Coso Hot Springs were not mentioned in the Memorandum of Understanding for using the area.	Native American cultural resources were identified through formal and informal consultations with the eight Federally Recognized Indian Tribes and three non-Federally Recognized Indian Tribes. The DoN is actively engaged with participating Tribes to update the 1979 Access MOA.
6. GEOLOGY AND SOILS				
6.1	7-11	Blackwell, J.	Request to include information on the Alquist-Priolo Earthquake Fault Zoning Act.	Text in Section 3.6.2 has been revised to clarify that the purpose of the Alquist-Priolo Earthquake Fault Zoning Act is to prevent the construction of buildings used for human occupancy on the surface trace of active faults.
6.2	7-12	Blackwell, J.	Request to include information on the Seismic Hazards Mapping Act, particularly that site-specific geothermal investigations must be undertaken before any land acquisition can proceed.	No property transfer is proposed in support of the land withdrawal renewal. As such, the Seismic Hazards Mapping Act is not applicable to the Proposed Action.
6.3	18-15	Howell, J.	Issues related to seismicity must be sufficiently characterized, quantified and analyzed.	Seismic hazards are discussed in Section 3.6.5, Seismicity and Seismic Hazards.
6.4	3-11	Bacock, A.	The model used in the ITSI report for hydrologic modeling should have included a two kilometer radius to look at the correlation between geothermal plant operations and the changes in the conditions at the Coso Hot Springs.	In the DoN's opinion, the modeling performed as part of the ITSI study was prepared and analyzed using the best available science with respect to both Coso Hot Springs and geothermal systems generally. Please see the DoN's responses to comments 5.9, 5.14 and 5.16 for further discussion of the ITSI study. Other than ongoing monitoring of the hot springs, no additional formal studies are currently planned
6.5	36A-1	Waiwood, R.	The EIS/LEIS does not address potential impacts to known mineral resources. A cooperative effort with the California Geological Survey could benefit this process.	BLM has recently completed their minerals potential report for the NAWSCL land withdrawal renewal action. Information with respect to uranium deposits from this report has been incorporated into Section
	36A-2	Waiwood, R.		
	36A-3	Waiwood, R.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
	36A-6	Waiwood, R.		3.6.6 of the EIS/LEIS. The BLM report determined through modeling that only two types of mineral deposits have a high potential for development. These included quartz-gold vein and shear systems within Mesozoic through mid-Tertiary granitic intrusive and older metamorphic rocks, and associated placer gold deposits. It was determined that other mineral resources exist in adequate deposits outside NAWSCL to meet market needs within the region. Because there isn't enough data available to assess the potential for an economic uranium deposit on NAWSCL, the BLM report recommended that a comprehensive survey of potential uranium deposit be made within the northern part of the North Range to determine if viable resources are present. Renewal of the land withdrawal and continuing operations at NAWSCL entails continuation of the current status quo with respect to potential development of mineral resources on the installation. Continuation of said status quo could be considered a lost economic opportunity and thus a form of socioeconomic impact, but it would not be an impact in the sense of altering baseline socioeconomic conditions.
	36A-7	Waiwood, R.		
6.6	36A-4	Waiwood, R.	It is assume that access to and development of valuable mineral deposits identified within the boundaries of NAWSCL can legally be developed.	Portions of NAWSCL have been withdrawn from all forms of appropriation under the public land laws, (including the mining laws and the mineral leasing laws) since 1947, and under the current NAWSCL boundary, since October 31, 1994, the date of the CDPA. The North Range is considered a valuable geothermal resource and, as such, an area is currently active with four producing geothermal steam power plants. Current statutory authorities allow development of

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				geothermal resources within NAWSCL. Notwithstanding whether or to what extent development or further development of mineral resources could potentially take place at NAWSCL subsequent to the now-approved renewal of the land withdrawal for the installation, the DoN's perspective is that any such potential minerals-related exploration and/or development on NAWSCL would likely be incompatible with the DoN's mission requirements as a practical matter. The EIS/LEIS was revised to include discussion of a potential minerals development-related alternative as an alternative 'considered but not carried forward' in Section 2.2.2.7.
7. WATER QUALITY AND HYDROLOGY				
7.1	2-1 30-1	Rothgeb, J.	Request to strike "seeking a renewed agreement to access the spring in perpetuity" and replace with "recommending an easement for the full 25 year period of the CLUMP." *Consideration for* a *long-term easement that would* allow *the Darwin Community* Services District *to* access Coso *Cold Springs* - The Final EIS/LEIS should state whether the Dept. of the Navy supports a renewed agreement to access the spring in perpetuity so that routine and emergency maintenance can be performed on the dirt access road when needed.	The current text reflects the current understanding by the DoN that the Darwin Community Services District is seeking a renewed agreement to access the spring such that routine and emergency maintenance can be performed on the dirt access road when needed. The Memorandum of Agreement between Commander, Navy Region Southwest and the DCSD dated November 3, 2010 provides access in perpetuity.
	12-15	Clark, J.		
7.2	2-2 30-2	Rothgeb, J.	Request to insert "water is currently extracted from Coso Cold Springs for domestic use by the community of Darwin."	Text in Section 3.7.3.1 has been revised to clarify that water is currently extracted from Coso Cold Springs for domestic use by the community of Darwin.
7.3	2-3 30-3	Rothgeb, J.	Request to insert "Water is currently extracted for domestic use from Coso Cold Springs for the Darwin	Text in Section 3.4.8 has been revised to clarify that water is currently extracted from Coso Cold Springs

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			Community" after "rainfall."	for domestic use by the community of Darwin.
7.4	8-15	Brashear, M.	Recommendation that the springs, seeps, and guzzlers are inventoried during spring and end of fall.	Monitoring of water sources and guzzlers is conducted in accordance with the INRMP and as funding is available.
7.5	25-11	Kelso, R.	The description of flooding is more accurate for extreme conditions. Under normal conditions, there is no path for the floodwaters to discharge on to NAWSCL property, and rainwater is retained in catch basins which can create unhealthy effects.	The concern raised is specific to stormwater run-on or floodwaters that do not penetrate NAWSCL boundaries. Therefore, this is not an issue relative to the EIS's/LEIS's analysis of the anticipated impacts of land withdrawal renewal or proposed activity changes.
7.6	25-12	Kelso, R.	Recommendation that NAWSCL should take the lead in establishing an Indian Wells Valley drainage control plan that facilitates the drainage of water onto the valley floor.	Flood management is a County responsibility. NAWSCL and other stakeholders would be participants in any such planning effort.
	24-13	Merk, S.		
7.7	25-13	Kelso, R.	Concern that groundwater supply estimates do not take into account impacts from high pumping rates on water quality and demand for groundwater from new farms.	The County of Kern is responsible for appropriate land uses though their current land use plans and ordinances. The DoN's understanding is that the County is also responsible for generating groundwater supply estimates.
7.8	25-14	Kelso, R.	Request for information on NAWSCL groundwater management activities and plans to extend the water supply. NAWSCL has an obligation to take a leadership role in long-term water availability mitigation by investigating external sources for the Indian Wells Valley.	The proposed changes in NAWSCL activities are not anticipated to cause a significant adverse impact on water resources/supplies. As such, there would be no need to "extend the water supply" as a result of proposed mission activity changes addressed in the EIS/LEIS. The DoN is actively involved in the IWV Cooperative Groundwater Management Group, which has focused some effort toward utilizing external sources of water, including water banking, water transfers, etc.
7.9	15-7	Goforth K.M.	The EIS/LEIS does not provide any indication that a Range Sustainability Environmental Program Assessment has been completed or is planned for NAWSCL. The EIS/LEIS should summarize a	Range assessments for soil/water contamination have been completed through the Installation Restoration Program and/or related programs.
	15-8	Goforth K.M.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			completed range assessment for NAWSCL and its conclusions about contamination of surface soils, groundwater, and surface water, or discuss the Navy's schedule to conduct a range assessment.	
7.10	15-11	Goforth K.M.	The EIS/LEIS should include a schedule for completing an inventory of seeps at NAWSCL. The EIS/LEIS should also clarify the portion of the installation that have been surveyed (e.g., areas within one mile of current and former target areas have been surveyed).	NAWSCL initiated surveys of 31 natural spring sites in 1995 and planned to continue the effort until funds/manpower were constrained. Monitoring of water sources and guzzlers is conducted in accordance with the INRMP and as funding is available.
7.11	24-8	Merk, S.	Insert, "Water is currently extracted from Coso Cold Spring for domestic use by the community of Darwin."	Text in Section 3.7.3.1 has been revised to clarify that water is currently extracted from Coso Cold Springs for domestic use by the community of Darwin.
7.12	24-9	Merk, S.	Change the wording under the Darwin Community Services District to read, "The Darwin Community Services District is recommending an easement for the full period of the 25 year CLUMP to access the Coso Cold Spring such that routine and emergency maintenance can be performed on the dirt access road when needed."	The EIS/LEIS was revised to reflect the current agreement between the DoN and DCSD. The Grant of Easement for DCSD for construction, installation, operation, maintenance, repair, and replacement of water pipeline is in perpetuity. Access to Coso Cold Springs will continue in accordance with current agreements, which can be renegotiated 5 years after the last easement agreement (last easement agreement was signed on 11/3/2010).
7.13	24-14	Merk, S.	NAWSCL needs to take a leadership role in long-term water availability by investigating external water sources for the IWV.	The DoN is actively involved in the IWV Cooperative Groundwater Management Group, which has focused some effort toward utilizing external sources of water, including water banking, water transfers, etc.
7.14	12-11	Clark, J.	*Impacts on surface water and groundwater upstream and downstream of the project area* - Please spell out the provisions of the existing cooperative groundwater management agreement between the Installation and other participating water purveyors. Can this agreement be included as	The cooperative agreement is available through the IWV Cooperative Groundwater Management Group's website at www.iwvgroundwater.org.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			an appendix in the Final EIS/LEIS? At present, it is not "readily available" to the public so that it can be incorporated by reference.	
7.15	12-12	Clark, J.	*Impacts on the* Rose *Valley Water Basin from Navy use of groundwater and from geothermal plant operations* - The EIS/LEIS acknowledges that long-term groundwater extraction (up to 4,680 acre-ft/yr) from the local, near surface groundwater aquifer, to augment geothermal reservoir fluid levels would likely have significant long-term impacts on groundwater resources in Rose Valley. To the extent possible, these impacts need to be more clearly spelled out and quantified in specific measurable terms. It would also seem that some mitigation could be devised to deal with these significant long-term impacts.	The text reflects the BLM reference document, which discusses the potential effects of long-term groundwater extraction (up to 4,680 acre feet/year) from the local, near surface groundwater aquifer. Groundwater requirements could increase the depth to groundwater near existing water supply wells in the central portion and north end of Rose Valley. The effects of such pump rates could include increased pumping lift and higher energy costs, and could potentially cause some shallower wells to go dry. Also, long-term pumping (up to 30 years) could cause a reduction in groundwater flow toward Little Lake Ranch.
7.16	12-13	Clark, J.	*Storm-water-related impacts, including post-construction hydrologic impacts* - This scoping issue has not been addressed. In the Darwin CSD, you *say* that BMPs would be required for construction repairs, as well as post-construction stabilization for long-term protection. However, you need to address this scoping issue for all post-construction hydrologic impacts in all areas of the project.	Post-construction effects would be in compliance with the State's NPDES small MS4 (municipal separate storm sewer system) permit.
7.17	12-14	Clark, J.	*Potential impacts from recycled water use and discharge* - This scoping issue has not been adequately addressed. You acknowledge that a portion of the annual hazardous waste generated by NAWSCL airfield and ground troop training activities would be recycled, but you do not identify its nature or quantify that amount to provide rationale for your conclusion about its insignificance.	Text within Section 4.11.2.1 discusses the potential increase in the use of vehicle fuels, oils, hydraulic fluids, transmission fluids, and vehicle batteries. The up to 25 percent increase in GTT activities is expected to generate an additional 10 tons (4.5 metric tons) of hazardous wastes. If a full 25 percent increase occurs, the hazardous wastes generated by NAWSCL activities would be approximately 15 tons (14 metric tons) per year, a portion of which would be recycled. The details regarding the quantity to be recycled is not known; however, the potential increase would be

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				within the Installation's permitted hazardous waste management capabilities (i.e., 1,166-ton [1,058-metric-ton] capacity) and would remain within the Installation's permitted limits; therefore, no significant impact on hazardous materials/waste management at NAWSCL would be anticipated.
7.18	24A-2	Merk	We are missing general comments that were provided by the public and whether it was used at all, for instance Darwin water comments.	Comments received on the Draft EIS/LEIS have been incorporated as appropriate. Text has been added to clarify that the Darwin Community Services District has rights to access its historical water source (Coso Cold Springs), which is within the NAWSCL boundaries.
8. SOCIOECONOMICS				
8.1	13-1	Inyo County	Expression of general support for the land withdrawal renewal and acknowledgement of the importance of NAWSCL to the local economy.	Comment acknowledged.
8.2	12-26	Clark, J.	*Socioeconomic* effects *of NAWSCL – The EIS/LEIS provides* no substantive analysis with quantification of these impacts. The beneficial impacts of continued withdrawal renewal must be identified and quantified. In addition, the "significant and adverse" impacts of the No Action Alternative must similarly be put into perspective with analysis and quantification.	Section 4.8 of the EIS/LEIS provides analysis of potential socioeconomic effects from implementation of the alternatives. Section 3.8 discusses the current (baseline) economic impact NAWSCL has on the region. Continuing mission activities at NAWSCL would result in continued similar economic effects in the region. Socioeconomic factors are addressed within Section 4.8 of the EIS/LEIS only from a perspective of their potential effect on the biophysical environment (i.e., changes in economic activity that have the potential for beneficial or adverse environmental consequences on resources such as land use, air quality, water quality, noise, and biological and cultural resources). Preparation of a formal economic impact analysis study is not mandated in support of an EIS/LEIS. In the event the No Action Alternative had been selected,

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				the DoN would have developed an Installation Closure Plan and would likely have prepared an economic impact study to support local communities in understanding the potential economic effects closure would entail. A formal economic impact study was not prepared for the No Action Alternative for consideration and incorporation into the EIS/LEIS. Notwithstanding the above, because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no longer representative of "no action" conditions at NAWSCL; therefore, the discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed (please see discussion in Section 2.3.3).
8.3	12-27	Clark, J.	Cost *of continuing the proposed withdrawal* - This issue raised by the public during scoping has not been acknowledged, mentioned, addressed, or analyzed in the EIS/LEIS.	Section 4.8 of the EIS/LEIS provides analysis of potential socioeconomic effects from implementation of the alternatives. Table 3.8-8 provides a summary of NAWSCL economic impact on the region. Continuing the RDAT&E mission at NAWSCL would result in continued similar economic effects in the region.
9. UTILITIES AND PUBLIC SERVICES				
9.1	5-8	Moose, V.	The geothermal plant operations cannot be considered a source of renewable energy.	Text in Section 3.9.4 has been revised to remove the word "renewable" regarding geothermal plant operations.
	28-8 34-8	Red Owl, T.		
	3-8	Bacock, A.		
10. PUBLIC HEALTH AND SAFETY				
10.1	27-1	Rajtora, S.	Identification of need for additional discussion regarding runway utilization, mitigation for noise and	The noise and safety analyses were performed using the 2007 AICUZ Study and 2011 AICUZ Update

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			safety risk, and unresolved conflicts between government documents.	(including their updated flight tracks) as the documents of standing regarding these issues and the AICUZ documents were thus cited.
10.2	27-2	Rajtora, S.	Inquiries as to why the EIS/LEIS impact conclusions for public safety differ from those of the Ridgecrest General Plan EIR and 2007 AICUZ Study. Identification that NAWSCL needs to have an ongoing safety program.	NAWSCL and the tenant commands maintain ongoing safety programs. Even though the Ridgecrest General Plan EIR used pre-2007 NAWSCL AICUZ Study data for its analyses, the DoN considers the EIS/LEIS to be in general agreement with the Ridgecrest General Plan EIR.
10.3	27-3	Rajtora, S.	Clarification for the description of China Lake Overlay: the Military Influence Area (MIA) boundary was developed by NAWSCL, not the City of Ridgecrest.	Text has been added to Section 2.4 clarifying that the City of Ridgecrest 2010 General Plan Update adopted MIA designations, based upon recommendations from the 2007 AICUZ Study as a planning tool to promote land use compatibility.
10.4	27-4	Rajtora, S.	Recommendation that the EIS/LEIS quantify the departure corridor and the width of the corridor depending on applicable variables (wind conditions, temperature, airspeed, and mission loading).	Text has been added to Section 3.10.4 to clarify that a full description of flight paths within the arrival and departure corridors is provided in Section 3.4 of the 2011 AICUZ Update.
10.5	27-5	Rajtora, S.	The safety benefit achieved by a pilot staying in a corridor 15,000 feet wide is arguable.	Text does not confine flights to a 15,000-foot corridor. The MIA proposed in the 2007 AICUZ Study is roughly based on the 60 dBA CNEL contour. The purpose of the MIA recommendation presented on page 6-4 of the 2007 AICUZ Study was to “address flight safety issues beneath flight corridors and to encourage retention of a buffer zone of compatible land use in case of future expansion of the NAWSCL mission.” The DoN considers the statement in the text to be accurate.
10.6	27-6	Rajtora, S.	Request that the EIS/LEIS demonstrate how departure routes have been designed to minimize noise and safety impacts.	The noise and safety analyses were performed using the 2007 AICUZ Study and 2011 AICUZ Update (including their updated flight paths) as the documents of standing regarding these issues, and the AICUZ documents were thus cited.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
10.7	27-7	Rajtora, S.	Recommendation that the EIS/LEIS quantify the departure the corridor width required to support a 4-ship departure and frequency of the procedure.	Flight tracks in the AICUZ Study are diagrammatic and not meant to convey precise lines aircraft follow. The dispersed flight tracks depicted in the 2011 AICUZ Update are meant to capture the subtle variations inherent to VFR operations by aircraft of differing capabilities and to fully capture that variability in the noise modeling.
10.8	27-8	Rajtora, S.	Requiring all pilots to depart on the assigned departure route may mitigate noise and safety issues.	Pilots do currently adhere to the departure routing and the route is constructed specifically to mitigate noise and safety concerns. Flight path variations within the corridor will occur but it is incorrect to consider these slight variations as deviations from the assigned departure route.
10.9	27-9	Rajtora, S.	Request to know how critical the 4-ship departure is to the NAWSCL mission and if the new procedure would create a negative safety impact.	The DoN conducts departures to meet mission requirements. Departures from Armitage Airfield are conducted in accordance with established air safety procedures.
10.10	27-10	Rajtora, S.	Recommendation that the EIS/LEIS should state if an analysis to determine the need for an APZ-II has ever been performed, the outcome of the analysis, and the factors that would trigger the need for future analysis.	The AICUZ Study is the document that defines the APZ and other safety constraints applied to airfield operations. Based on existing and projected operational tempo, there is not a need to perform APZ-II analysis.
10.11	27-28	Rajtora, S.	The historical reference provided for safety incidents is not valid due to the utilization of Runway 14, and the EIS/LEIS must provide a quantitative analysis of safety risks.	As presented in the 2007 AICUZ Study, with the Consolidated Departure Alternative, the risks to members of the public should be lower as the flight path is adjusted 1 mile west, over lower populated areas as compared to previous 14D1 departure flight route. The 2011 AICUZ Update analysis expands upon the 2007 study.
10.12	27-29	Rajtora, S.	Clarification that the crash near Faller School was not on public land.	The text discusses the two accidents that have occurred off-station. There is no need to revise text to clarify whether the incidents occurred on public lands

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				or non-public lands.
10.13	27-30	Rajtora, S.	Request to quantify the meaning of the terms "proximity" and "adjacent."	Text has been revised in Section 4.10.2.1 to clarify "proximity" is within 1 mile [1.6 kilometers]. Adjacent has been replaced with "nearby".
10.14	27-31	Rajtora, S.	The Navy should purchase all parcels where the safety risk is not mitigated to less than significant.	No significant impacts are anticipated, so no such lands (i.e., parcels where the safety risk is not mitigated to less than significant) are identified in the EIS/LEIS.
10.15	27-32	Rajtora, S.	Request quantifiable data to justify the conclusion that Alternative 1 would not create a significant safety risk and the inclusion of Navy procedures for safeguarding against flight accidents.	DoN procedures for safeguarding public safety are provided in Section 3.10 (NATOPS, R-2508 Manual, 2007 AICUZ Study, 2011 AICUZ Update, and rules, regulations, and procedures referenced within those documents). Two off-station incidents (0 public injuries, 0 public fatalities) within the past 60+ years provide a quantifiable historical measure of the public safety risk per operation.
10.16	27-33	Rajtora, S.	Reducing development and population density in the MIA is not valid mitigation for safety risks. Mitigation should include improved aircraft safety, flight corridors, or other procedures to ensure that safety risk is less than significant.	The Military Influence Area (MIA) is a land use planning tool adopted by the city to promote and maintain compatible land use. The concept of MIA designation has been approved by the DoD, the State of California, and the City of Ridgecrest. The DoN does not seek to reduce development or population density, but rather to maintain and promote compatible land uses.
	25-9	Kelso, R.		
	9-1	Breil, S.		
10.17	27-34	Rajtora, S.	Request to provide analytic information for changes since the 2007 AICUZ Study, particularly regarding the MIA.	The NAWSCL 2007 AICUZ Study was updated in 2011. Recommendations regarding the MIA can found in the 2011 AICUZ Update. The EIS/LEIS must incorporate the 2011 AICUZ Update information as it is the DoN's currently approved technical document.
	9-2	Breil, S.		
10.18	27-35	Rajtora, S.	Route 14D3 is problematic since it flies over populated areas, and that Routes 21D1, 26D3, and 14D2 should move to Route 21D2.	The NAWSCL 2007 AICUZ Study was updated and formally approved in 2011. The NAWSCL 2011 AICUZ Update remains the DoN's currently authorized

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				technical document. Please see response to comments 10.7 and 10.27.
10.19	27-36	Rajtora, S.	Request to include information regarding Navy protocols to not depart over incorporated Ridgecrest or populated areas.	DoN standard operating procedures adhere to Federal Aviation Regulations with respect to overflight of congested areas. Specifically FAR Sec. 91.119 — Minimum safe altitudes: "(b) Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft." NAWSCL departure and arrival routes are constructed to be well above that minimum altitude when operating over the City of Ridgecrest.
10.20	27-37	Rajtora, S.	Runway 21 departure safety risk can be minimized by flying down the center of the departure corridor, but that Runway 14 departure safety is more complicated and crashes could be in populated areas unless flights performed straight out departures.	There are no accident potential zones for Runway 14 due to the limited number of operations. If there were, they would lie wholly within the boundary of the Installation. The 2011 AICUZ Update is approved and is the document of standing at this time for aircraft operations from Armitage Airfield.
	9-3	Breil, S.		
	9-4	Breil, S.		
10.21	25-10	Kelso, R.	Request explanation of the planned role for Runway 14 over the next 25 years and a reassessment of departure operations from Runway 14, including the development of an APZ I and APZ II.	Description and analysis of departure/arrival flight paths are provided in the 2011 AICUZ Update.
10.22	27-38	Rajtora, S.	Recommendation to conduct a crash footprint analysis to determine the proper route to minimize safety impacts over populated areas.	Departure and arrival corridors are already deconflicted with populated areas and generally stay over undeveloped land. The flight safety standard operating procedures have identified least impact corridors/routes as a function of the AICUZ studies and those recommendations are provided to city and county for incorporation into their land use management plans.
10.23	27-39	Rajtora, S.	Request to provide an explanation as to why straight-out departures cannot be performed in Runway 14, and why utilization of Runway 14 is	Straight-out departures on Runway 14 would place outbound air traffic in direct conflict with inbound air traffic for all runways and create a significant flight

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			projected to increase.	safety hazard. The projected increase for Runway 14 operations is consistent with the potential for an overall increase in operations at NAWSCL. Actual runway utilization varies depending on factors such as weather, operations, and runway maintenance and repair.
10.24	27-40	Rajtora, S.	Request the inclusion of risk mitigation performed between the Ridgecrest General Plan EIR and the EIS/LEIS in order to justify differences in safety conclusions of those documents.	Although the Ridgecrest General Plan EIR used pre-2007 NAWSCL AICUZ Study data for its analyses, the EIS/LEIS is in general agreement with the Ridgecrest General Plan EIR. The DoN notes that the City's EIR found that "The Proposed Project (General Plan Update) could result in development located within an airport land use plan or within two miles of a public or private airstrip but would not result in a safety hazard for people residing or working in the project area." Furthermore, the EIR found "No Feasible Mitigation Measures (Beyond Currently Proposed General Plan Policies and Implementation Measures) Available."
10.25	27-41	Rajtora, S.	Request the inclusion of criteria used to establish the 40,000 square foot per residence parcel size as being compatible with the Navy's mission.	Section 7.3.2 of the 2011 AICUZ Update provides recommendations for city and county entities, including recommendation #4, which specifies "Develop and implement a policy requiring a site-specific evaluation for any proposed General Plan Amendments or zoning changes that would create residential projects or increase allowable density of existing designated residential development in an area identified as impacted by noise or safety concerns, and require appropriate notification of potential aircraft noise and flight safety risk to realtors, buyers, sellers, and residents of land within the flight corridor areas of the MIA."
10.26	27-42	Rajtora, S.	Request the inclusion of the real timeline for movement of departure routes since the 2007 AICUZ Study and the mitigated risk and change in	The departure corridors were not amended in the 2011 AICUZ Update (updating the 2007 version) The 2007 AICUZ Study included a consolidation of multiple departure corridors that existed previously into one

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			MIA size as a result of this movement.	main departure corridor over undeveloped land west of the city of Ridgecrest. This corridor has not been changed since 2007. For purposes of the 2011 AICUZ Update, flight paths within the corridor were examined to more accurately model the noise contours. As there has been no change in departure corridors, there is no specific recommended change to the MIA, however "NAWS recommends city and county review and adjust as appropriate the MIA area of interest to meet their planning and management goals" (2011 AICUZ Update, pages 7-8, recommendation 3).
10.27	27-43	Rajtora, S.	Request specification of appropriate land use densities under different departure conditions.	Section 7.3.2 of the 2011 AICUZ Update provides recommendations for city and county entities, including recommendation #4, which specifies "Develop and implement a policy requiring a site-specific evaluation for any proposed General Plan Amendments or zoning changes that would create residential projects or increase allowable density of existing designated residential development in an area identified as impacted by noise or safety concerns, and require appropriate notification of potential aircraft noise and flight safety risk to realtors, buyers, sellers, and residents of land within the flight corridor areas of the MIA."
10.28	27-44	Rajtora, S.	Request clarification of the "areas of increased risk" beyond flight corridors and request for these areas to be shared with the City of Ridgecrest and neighboring counties, as well as the criteria for site-specific risk evaluations.	See NAWSCL 2011 AICUZ Update, page 6-5 for discussion of airfield flight corridors: "These flight corridors represent areas where aircraft operations are concentrated and where accident potential and safety risks are inherently greater than in areas subject to infrequent overflights."
10.29	27-45	Rajtora, S.	Request clarification of the safety risk inside the MIA, and benefits of the risk notification that the City provides to property owners and real estate agents. The Navy should purchase property at market value where the risk has not been mitigated to less than	The DoN provides AICUZ studies so cities, counties, and residents can make informed land use decisions in areas potentially impacted by airfield operations (areas over which departing and arriving aircraft fly). Similar studies are done for public airports. Land use

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			significant.	decisions such as zoning requirements for new construction are made by local governments. Any discussion about the impact of those decisions on private property is outside the scope of this EIS/LEIS.
10.30	27-46	Rajtora, S.	Desire for information regarding the lack of agreement between the conclusions of the EIS/LEIS, the 2007 AICUZ Study, and the Ridgecrest General Plan EIR regarding areas of significant safety risk, particularly important for areas of the city that have been downzoned to be compatible with safety risk from flights.	Even though the Ridgecrest General Plan EIR used pre-2007 NAWSCL AICUZ Study data for its analyses, the EIS/LEIS is in general agreement with the Ridgecrest General Plan EIR. The DoN notes that the City's EIR found that "The Proposed Project (General Plan Update) could result in development located within an airport land use plan or within two miles of a public or private airstrip but would not result in a safety hazard for people residing or working in the project area" Furthermore, the EIR found "No Feasible Mitigation Measures (Beyond Currently Proposed General Plan Policies and Implementation Measures) Available."
10.31	11-1	Butler, D. and R.	Request for clarification of which areas are deemed unsafe for development, particularly at or near the Faller School, which were deemed unsafe in the 2007 AICUZ Study and now considered safe in the EIS/LEIS. Request for clarification of which areas are deemed unsafe for development, particularly residential areas in the City of Ridgecrest. Request for information on what the Navy is doing to make those areas safe, and how the Navy is alleviating housing development concerns in areas that are deemed safe.	The EIS/LEIS does not determine whether any particular area is safe/unsafe for development. The EIS/LEIS reflects what is stated in the AICUZ Study regarding establishment of Clear Zones/Accident Potential Zones (APZ), and departure/arrival flight paths. The AICUZ Study likewise does not determine whether any areas are unsafe for development. It does, however, recommend appropriate land uses adjacent to the airfield based on APZs and noise (CNEL Contours). Please see the 2011 NAWSCL AICUZ Update for recommended DoN actions with respect to mitigations the DoN is currently working to implement.
	23-1	Miller, S.		
	26-1	Porter, S.		
10.32	15-9	Goforth K.M.	The EIS/LEIS should specify or estimate the frequency of clearance activities for both UXO and MPPEH for the proposed action and baseline alternatives.	This issue is addressed in Section 3.10.11 of the EIS/LEIS.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
10.33	15-10	Goforth K.M.	The EIS/LEIS should describe impacts of delayed clearance, if appropriate.	As described in Section 3.10.11, range clearance is performed on North Range operational ranges following test events or series of events. South Range clearance is performed when allowed by budget and scheduling. Material potentially presenting an explosive hazard (MPPEH)/unexploded ordnance (UXO) outside operational ranges is cleared as budget and scheduling allow. As discussed on page 4.10-3, increased target and test site use would not lead to increased safety impacts as range clearance is folded into range use planning for each test or series of tests.
10.34	5-16	Moose, V.	Since the areas for active military training activities are not being conducted in adjacent areas of the Coso Geothermal area, then it is unknown the need for it to be used as a safety/security buffer.	Although testing or training activities are not conducted immediately adjacent to the geothermal area, this area is regularly within the safety footprint for range test events and/or overflights. NAWCWD has compiled the safety footprint for RDAT&E activities conducted at NAWSCL; the safety footprints overlap and comprise all of the land areas of the NAWSCL North and South Ranges. The DoN has determined mission requirements for effective land use controls to ensure safety and security. Please see the DoN's responses to comments 14.4 and 15.10 for further discussion of safety footprints as they pertain to Coso Hot Springs.
	28-16 34-16	Red Owl, T.		
	3-6	Bacock, A.		
10.35	24-10	Merk, S.	The 2011 AICUZ Update referenced by the draft NAWSCL EIS/LEIS has multiple changes to flight routes and allocation of flights between runways compared to the 2007 AICUZ Study with no discussion of reasoning for the changes.	Section 3.4 of the 2011 AICUZ Update provides an explanation of the updated flight paths. Please see responses to comments 10.7 and 10.26.
10.36	24-11	Merk, S.	NAWSCL needs to be clear regarding its safety objectives and how it intends to satisfy those objectives, i.e., what specific mitigation has been imposed? Meaningful analysis needs to be provided	When significant impacts are identified, mitigation measures are to be developed within the EIS process. As no significant impacts were found, mitigation measures are not required under NEPA. However, for

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			that supports the conclusion stated by the EIS/LEIS, i.e., no significant risk.	each alternative, procedures/protocols/etc. implemented to reduce the public health risks are summarized. See pages 4.10-4 and 4.10-5 for the summary of procedures to be implemented under the Proposed Action.
10.37	18-22	Howell, J.	The EIS/LEIS must consider a reasonable spectrum of potential accident scenarios that could occur over the life of the proposed action, including the maximum reasonably foreseeable accident. This is especially important within all areas to be shared with the public, as well as for transportation accidents.	Accident events are discussed in Public Health and Safety Sections 3.10.5 and 4.10.2.1 of the Draft EIS/LEIS. The discussion will also be found in the Final EIS/LEIS under Public Health and Safety section. Further impacts analysis is not necessary to perform at this time within this Statement using the regulatory standard found at 40 CFR 1502.22 (b) (4).
10.38	12-34	Clark, J.	To conclude that there would be no significant change from the baseline is unsubstantiated as the EIS/LEIS does not address closures and restrictions on a regional basis, as well as the increasing need of general aviation.	The proposed change in operational tempo is not expected to result in changes to general aviation access to the airspace. The Proposed Action will make no changes to airspace boundaries or designation, nor does the DoN anticipate changes in operating hours.
10.39	12-35	Clark, J.	*Rerouting of general aviation air traffic that could result in environmental impacts from consumption of extra fuel, more carbon and combustion products, and noise* - This issue raised by the public during scoping has not been acknowledged, mentioned, addressed or analyzed in the EIS/LEIS.	The DoN does not anticipate any additional rerouting of general aviation traffic based on the Proposed Action.
11. HAZARDOUS MATERIALS AND WASTE				
11.1	6-7	Vega, B	The Navy generates Hazardous materials and wastes and transports such materials and wastes through communities even though this is in accordance with Title III of SARA (aka EPCRA). The Tribe recommends officials, emergency response teams, and Tribes within the surrounding communities be trained in case of a spill within their 'jurisdictions".	The DoN will respond to any spill scenario in accordance with applicable laws and policies. The DoN concurs that local responders should be trained.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
11.2	12-22	Clark, J.	The Draft EIS/LEIS has failed to adequately address the potential for contamination to air, water and land from munitions.	The evaluation of the three alternatives with respect to material potentially presenting an explosive hazard (MPPEH) is provided in Section 4.11. Hazardous wastes, including MPPEH, identified during range cleanup activities are transferred to the Hazardous Waste Storage and Treatment Facility for appropriate disposition.
11.3	12-23	Clark, J.	*Spill prevention and response action plan to protect water quality from spills* - Where is this issue (raised during scoping) addressed in the EIS/LEIS? The EIS/LEIS has little or no discussion on mitigation (i.e., best management practices) to deal with spill prevention and response.	As a document designed for the analysis of environmental impacts under the National Environmental Policy Act, the EIS/LEIS is not intended to serve as the DoN's comprehensive spill prevention and response action plan for Naval Air Weapons Station, China Lake. Accordingly, the EIS/LEIS does not include a detailed discussion of spill prevention and response measures. However, it does discuss the compliance with EPCRA and spill response for the installation, which is part of the regulatory framework under which NAWSCL operates with respect to management of hazardous materials and hazardous waste. Please see Section 3.11.2 of the EIS/LEIS.
11.4	12-24	Clark, J.	*Impacts resulting from hazardous materials corrective action obligations* - The EIS/LEIS must be more forthcoming with these significant impacts associated with the action alternatives. You must quantify them in terms of scope, magnitude, duration and intensity. You must identify potential mitigation and costs of such. Your conclusion that "standard procedures would be used in their handling and disposal; therefore, no significant impacts would be anticipated" is totally unsubstantiated.	Section 4.11 of the Draft EIS/LEIS evaluates the three alternatives' potential impact with respect to hazardous materials and wastes. The DoN would continue to remediate sites of contamination in accordance with CERCLA or MMRP requirements as appropriate.
11.5	12-25	Clark, J.	*Consideration for* a *plan for the clean-up and reclamation of the project site for future nonmilitary use* - Only in section 4.1 have you acknowledged the need for an Installation closure and remediation	If the No Action Alternative had been selected, the DoN would have prepared and implemented an Installation Closure Plan. Such a plan, including potential costs, would only be

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			plan for hazardous materials in association with non-renewal of the land withdrawal. No specifics or costs are identified. Reclamation has not been mentioned or addressed in the Draft EIS/LEIS. This is a serious oversight.	necessary if Alternative 3 had been selected; therefore, the details of implementing an Installation Closure Plan were not incorporated into the EIS/LEIS.
12. TRAFFIC AND CIRCULATION				
12.1	12-28	Clark, J.	The EIS/LEIS states that "continuation of nonmilitary uses (as well as recreation, research, education) is not anticipated to result in significant impacts to transportation and circulation." Where in the EIS/LEIS do you address and fully analyze the impacts of military activities on circulation and traffic?	Section 4.12 provides analysis of potential traffic and circulation impacts from implementation of the alternatives. No significant increase in Installation personnel would occur; therefore, with consideration of potential future growth in the region, potential impacts to traffic and circulation would not be significant.
12.2	12-29	Clark, J.	*Desire to see the road between the ranges remain open for public use* - The EIS/LEIS has not addressed the topic on improved or increasing public access by opening roads, even on a temporary or intermittent nature.	Due to security and safety concerns during RDAT&E activities, the DoN would need to continue to maintain and control range roads, including the road between the North and South Ranges.
12.3	16-2	Goss, K.	Because traffic going to the Base must pass directly through the populated area of Darwin, we appreciate all vehicles observing a speed limit of 10 mph within town limits, to minimize the impact of dust and noise.	The DoN anticipates that personnel en route to activities on NAWSCL will observe posted speed limit signs within the community of Darwin.
13. APPENDICES AND SUPPORTING DOCUMENTS				
13.1	4-1	Austin, M.	Complaint that the INRMP, ICRMP, Programmatic Agreement, previous CLUMP, and other associated documents (e.g., AICUZ Update, Airfield Master Plan [AMP]; the 2011 NAVAIR Operations Requirements Document and other technical directives) were not provided to the public as	Comments received during the 90-day public comment period indicated that certain key reference materials supporting the environmental impact analysis within the Draft EIS/LEIS had not been available to the public for consideration during the 90-day comment period. Accordingly, on January 11,
	17-1	Greenfield, B.		
	25-3	Kelso, R.		
	8-8	Brashear, M.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
	25-25	Kelso, R.	requested during the scoping period.	2013, the DoN made the documents available to the public and reopened the public comment period for an additional 30 days (January 11, 2013 - February 11, 2013). Notice of the 30-day reopened public comment period was published in the Federal Register on January 11, 2013 (77 FR 2378). The notice was also published in 7 newspapers. During the reopened public comment period, the Draft EIS/LEIS and 16 additional key reference materials were made available for public review including the following documents: • The 2000 INRMP. The INRMP was subsequently updated in 2014. • The October 2012 Final ICRMP. • Existing BOs for threatened and endangered species on NAWSCL. The USFWS issued a BO for this action in February 2013 and it is included in the appendices of the Final EIS/LEIS. • The October 2012 Programmatic Agreement. • NAWSCL does not maintain a formal fire management plan; they address fire management at the Installation in accordance with fire management measures that have been further clarified in the EIS/LEIS. • The Draft CLUMP was included as Appendix C of the Draft EIS/LEIS; the final revision of the CLUMP will reflect the decision for the EIS/LEIS (i.e., continue current activities or up to 25 percent increase in mission activities (withdrawal renewal approved as of December 2013)). • Figures 3-1 and 3-2 of the Draft CLUMP were provided during the reopened public review.
	24-22	Merk, S.		
	24-2	Merk, S.		
	24-4	Merk, S.		
	12-32	Clark, J.		
	12-41	Clark, J.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				These figures show the military land uses for North and South Range. All 16 documents can be found on the project website www.ChinalakeLEIS.com. The reference materials were also forwarded to 6 local libraries for public review. Individuals requesting the reference materials were sent letters with a CD-ROM containing the documents and the Executive Summary from the draft EIS/LEIS. The letter provided the project website where the documents could be downloaded. The letter also notified these individuals that the public comment period would be reopened for another 30 days.
13.2	17-3	Greenfield, B.	The INRMP and other referenced documents are out of date and therefore the EIS/LEIS is out of NEPA compliance. When supporting documents have been updated and revised, the public should have another comment opportunity.	Available biological and cultural resources information (e.g., surveys, studies, assessment) were used in the preparation of the EIS/LEIS. The ICRMP was finalized in October 2012 and is included in the Final EIS/LEIS. The INRMP was updated in 2014 and is included in the Final EIS/LEIS.
	25-26 25-40 25-62	Kelso, R.		
	24-23	Merk, S.		
	4-3	Austin, M.		
13.3	25-63	Kelso, R.	The ICRMP and appendices should have been released to the public for review prior to the EIS/LEIS, since it is referenced in the EIS/LEIS.	The ICRMP was finalized (October 2012) during the public review period for the Draft EIS/LEIS. It is included in the Final EIS/LEIS. The 2012 ICRMP was made available on the NAWSCL EIS/LEIS public website during the re-opened public review period (www.ChinalakeLEIS.com).
13.4	25-66	Kelso, R.	Request to provide to the public the Programmatic Agreement (PA) issued as a requirement of the ICRMP from Section 106 consultations. (Comment also listed under Cultural Resources).	The October 2012 Programmatic Agreement has been incorporated as Appendix H of the Final EIS\LEIS.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
13.5	4-4 25-6 24-5	Austin, M. Kelso, R. Merk, S.	Suggestion to pull back public submittal of the EIS/LEIS and hold public hearings at a later date when the supporting documents, processes, and maps are properly included and the CLUMP has been improved.	The 2005 CLUMP was used during the preparation of the Draft EIS/LEIS. Under the Proposed Action, NAWSCL would revise/update the 2005 CLUMP. The draft version of the CLUMP update (associated with the Proposed Action) was included as Appendix C of the Draft EIS/LEIS. The final version of the CLUMP update will reflect the decision for the EIS/LEIS, i.e., continue current activities or up to 25 percent increase in mission activities (withdrawal renewal approved as of December 2013).
13.6	4-5 25-7	Austin, M. Kelso, R.	Concern that NAWSCL missions activities will be compromised due to noncompliance with NEPA from lack of supporting documents and adequate public review.	The INRMP, ICRMP, and CLUMP are available on the NAWSCL EIS/LEIS public website at www.ChinalakeLEIS.com. The AICUZ Update had been distributed to local governments with planning functions in the vicinity of NAWSCL. The 2012 ORD and Draft CLUMP were made available in the appendices as part of the Draft EIS/LEIS public review. The October 2012 ICRMP and Programmatic Agreement are included in the Final EIS/LEIS. The 2000 INRMP and 2011 AICUZ Update were made available for public review during the preparation of the documents. The INRMP was updated in 2014.
13.7	4-2 25-5 25-18 25-19 25-23 25-24 25-29	Austin, M. Kelso, R.	The CLUMP update provided in the EIS/LEIS is incomplete and must note changes in the text or have discernible revisions from the previous CLUMP for adequate public review under NEPA statue. Request that the previous CLUMP be provided for comparison.	The final revision of the CLUMP reflects the decision for the EIS/LEIS, i.e., continue current activities or up to 25 percent increase in mission activities (withdrawal renewal approved as of December 2013). The previous CLUMP is available for viewing on the NAWSCL public website at www.ChinalakeLEIS.com. Please see response to comment 13.60.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
	17-2	Greenfield, B.		
	24-21	Merk, S.		
13.8	29-2	Ross, J.	Recommendation to provide maps showing nonmilitary but mission-compatible activities in the Final EIS/LEIS.	The on-installation land use maps (with target and test areas shown) have been incorporated.
13.9	8-3	Brashear, M.	Recommendation to revise the spacing in the CLUMP Executive Summary.	Word spacing has been corrected. Inconsistent spacing resulted during PDF conversion.
13.10	25-20	Kelso, R.	Maps provided in the CLUMP update are incomplete, and the CLUMP is missing a reference to the Navy's Mojave Gunnery Range near Edwards Air Force Base.	The final revision of the CLUMP will generally remain in its current draft form until the DoN issues its decision(s) with respect to the operational tempo and the CLUMP. The CLUMP will be finalized to reflect these decisions as they are reached. Figures 3-1 and 3-2 of the Draft CLUMP were provided during the reopened public comment period (please see response to comment 13.60). Maps will be updated as appropriate to reflect the decision of the EIS/LEIS. Text has been added to Section 1.0 of the CLUMP to clarify that the former Mojave Gunnery Range is a geographically separated unit that is no longer operational. Further discussion of the former gunnery range is not included as it is not appropriate to incorporate with the active North and South Ranges of NAWSCL (the focus of the CLUMP).
	24-18	Merk, S.		
13.11	25-21	Kelso, R.	Identification that the references in the CLUMP update are inconsistent – for example, the ICRMP is stated as both a 2011 and a 2012 draft on pages 1-5 to 1-7.	Text has been corrected in Section 1.10 of the CLUMP; the ICRMP was finalized in October 2012.
	24-19	Merk, S.		
13.12	25-22	Kelso, R.	Recommendation that the CLUMP update include a zoning map to define areas of operations and environmental concerns.	On-Installation land use maps (Figures 3-1 and 3-2 with target and test areas shown) have been incorporated.
	24-20	Merk, S.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
13.13	25-27 24-24	Kelso, R. Merk, S.	Request for further information on the "lessons learned" referenced in the following sentence: "These [zoning maps] provide day-to-day direction for managing land use and were developed from the referenced management plans and from lessons learned since the endorsement of the 2005 CLUMP."	Text has been revised in the Executive Summary of the CLUMP to define the reference to "lessons learned" since the 2005 CLUMP was implemented.
13.14	25-28 24-25	Kelso, R. Merk, S.	Request for clarification on how and how often "customers" and the "general public" have an opportunity to participate in the annual review and revision of the CLUMP.	Text has been revised in the Executive Summary to clarify public review and input for the CLUMP.
13.15	25-30 24-27	Kelso, R. Merk, S.	Request for clarification of how "issues of mutual interest and concern" are identified in the CLUMP update.	Section 1.5.4 of the CLUMP discusses NAWSCL coordination with other Federal, State, and local land use planning and resource management agencies regarding issues of mutual interest and concern.
13.16	25-31 25-64 24-28	Kelso, R. Merk, S.	Request for clarification of whether the ICRMP is a 2011 document as referenced in the Draft EIS/LEIS or a 2012 document as referenced in the CLUMP. Was it provided to the public for review?	The ICRMP was finalized (October 2012) during the public review period for the Draft EIS/LEIS. It is included in the Final EIS/LEIS. The 2012 ICRMP was made available on the NAWSCL EIS/LEIS public website during the re-opened public review period (www.ChinalakeLEIS.com).
13.17	25-32 24-29	Kelso, R. Merk, S.	Request to know if the 2011 AICUZ Update was provided to the public for review.	The 2011 AICUZ Update was provided for public review during the Ridgecrest City Council meeting on July 6, 2011, and at a Public Open House in Ridgecrest that occurred on July 12, 2011.
13.18	25-33 24-30	Kelso, R. Merk, S.	Request to know the reason why the CLUMP refers to 5 years in the following statement, rather than 25 years as states in the EIS/LEIS: "Military operations include increases in the type and tempo, of ongoing and evolving military test, training, and support operations to meet expected	The assessment of future mission requirements at NAWSCL considered a 5-year period into the future as that is a reasonable timeframe for which the DoN and other DoD users of the Installation can estimate future RDAT&E requirements based on new technology and available funding. This is how the estimated 25 percent increase in mission operations was

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			customer requirements over 5 years."	derived. The 25 years referred to in the EIS/LEIS is for the land withdrawal renewal to allow the DoN to continue RDAT&E and training at NAWSCL.
13.19	6-12	Vega, B	The Tribe requests that the Navy not include the Tribes in the four groups as categorized in (1.5.5) (Nonmilitary land use is grouped into four categories: Native American interests, educational and research activities, recreational activities, and commercial activities). Furthermore, the policy should be consistent with the other groups mentioned.	Sections 1.5.5 and 2.5 have been created to separate Native American discussion from nonmilitary discussion.
13.20	25-34 24-31	Kelso, R. Merk, S.	Request information supporting the statement that the CLUMP accommodates management in a cost-effective manner, since many of the mitigation measures included in the EIS/LEIS do not appear to be cost-effective; for example, "sensitive" mitigation provided in the biological and cultural resources sections. Request explanation as to how mitigation is both required and cost-effective.	The text and bullets in Section 1.7 states that the CLUMP provides the planning and management framework to accommodate the DoN's comprehensive, long-term land use needs, including: • Accommodating current and evolving mission requirements in an effective and efficient manner while achieving and maintaining environmental compliance and conservation goals and objectives. • Ensuring that ongoing and proposed land uses comply with CDPA, FLPMA, and OPNAVINST M-5090.1 and other applicable requirements. • Implementing the goals and objectives of other applicable management plans and initiatives. • Maintaining and enhancing NAWSCL's role in regional land use and ecosystem management initiatives. Mitigation measures outlined in the EIS/LEIS are primarily regulatory driven (e.g., compliance with stipulations in the ICRMP and INRMP and associated 2013 BO and 2012 PA) and NAWSCL will comply with those stipulations.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
13.21	25-35	Kelso, R.	Figure 1-1 claims that compliance and conservation requirements undergo a public and agency review, which has not occurred with the ICRMP, PAs, BOs, and INRMP.	Figure 1-1 is a representation showing that information is incorporated into the CLUMP and eventually evaluated in an EIS through the NEPA process. Source documentation is typically maintained in an administrative record. Since the release of the Draft EIS/LEIS in August 2012, several actions that were pending have occurred. These include: • Programmatic Agreement (PA) between NAWSCL and State Historic Preservation Office was signed in October 2012, which endorsed the 2012 ICRMP and completed the Section 106 consultation. These documents were provided during the reopened public comment period. The Final EIS/LEIS will reflect the PA and ICRMP. • Biological Opinion (BO) was issued by U.S. Fish and Wildlife in February 2013. This document updates and replaces the previous BO in the Draft EIS/LEIS and documents the completion of the Section 7 consultation. The Final will reflect the 2013 BO in the Final EIS/LEIS. The INRMP was updated in 2014. It is referenced in the Final EIS/LEIS and is available on the project website www.chinalakeleis.com..
	24-32	Merk, S.		
13.22	25-36	Kelso, R.	Request for clarification on the number of hectares of NAWSCL since the numbers in the CLUMP differ from page 108 of the EIS/LEIS.	Text within the CLUMP has been revised as appropriate to reflect the acreages listed in the EIS/LEIS and INRMP.
	24-33	Merk, S.		
13.23	25-37	Kelso, R.	Request for clarification of the term “landforms.”	A landform is a topographical element that is largely defined by its surface form and location in the landscape, such as terrain.
	24-34	Merk, S.		
13.24	25-38	Kelso, R.	The CLUMP cannot state “refer to draft ICRMP” or	During the re-opened public comment period, the Draft

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
	24-35	Merk, S.	"see INRMP" when the documents have not been provided to the public for review and comment.	EIS/LEIS and the additional key reference materials were made available for public review. • The 2000 INRMP was provided. The INRMP was subsequently updated in 2014. • The October 2012 Final ICRMP was provided. • Existing BOs for threatened and endangered species on NAWSCL were provided; the USFWS issued a BO for this action in February 2013, which is included in the appendices of the Final EIS/LEIS. • The October 2012 PA was provided.
13.25	25-39	Kelso, R.	Request justification as to why acreages for cultural resources are dated from one year ago, if survey work has been done over the past year, and the most recent acreages as of August 2012.	Different parcels of land are surveyed at different times throughout the year. The 2012 ICRMP includes survey methodology.
	24-36	Merk, S.		
13.26	25-41	Kelso, R.	Request references for "US Navy 1998b/US Navy 1996," "USFWS 1998a," and "Bagley 1986." Due to their advanced age, request information regarding the validity of the findings included in these documents.	Text within Section 2.5.2 of the CLUMP has been revised to reflect the 2014 INRMP update.
	24-38	Merk, S.		
	24-39	Merk, S.		
13.27	8-10	Brashear, M.	Request additional detail on pages 3-4 and 3-5 for text headed under headed military south range and military north range.	On-Installation land use maps (Figures 3-1 and 3-2 with target and test areas shown) have been incorporated.
13.28	25-42	Kelso, R.	Identification that Figures 3-1 and 3-2 are mislabeled as "Military Land Uses" since they are referenced in the text as "Land Use Zones."	On-Installation land use maps (Figures 3-1 and 3-2 with target and test areas shown) have been incorporated.
	24-40	Merk, S.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
13.29	25-43	Kelso, R.	Since there are no maps provided, the public cannot understand the land uses as they relate to zoning and protection of resources; therefore, the CLUMP and EIS/LEIS are unreviewable and out of NEPA compliance.	The final revision of the CLUMP will generally remain in its current draft form until the DoN issues its decision(s) with respect to the operational tempo and the CLUMP. The CLUMP will be finalized to reflect these decisions as they are reached. Figures 3-1 and 3-2 of the Draft CLUMP were provided during the reopened public comment period (please see response to comment 13.60). Maps will be updated as appropriate to reflect decision of the EIS/LEIS.
13.30	25-44	Kelso, R.	Request locations of "Intensive Use Zone" and "Safety and Security Zone" on a map.	On-Installation land use maps (Figures 3-1 and 3-2 with target and test areas shown) have been incorporated.
	24-41	Merk, S.		
13.31	25-45	Kelso, R.	The public cannot review and understand the "management priorities that have been identified" since no revised INRMP or draft ICRMP has been provided.	During the re-opened public comment period, the Draft EIS/LEIS and the additional key reference materials were made available for public review. • The 2000 INRMP was provided. The INRMP was subsequently updated in 2014. • The October 2012 Final ICRMP and PA were provided. • Existing BOs for threatened and endangered species on NAWSCL were provided; the USFWS issued a BO for this action in February 2013, which is included in the appendices of the Final EIS/LEIS.
	24-42	Merk, S.		
13.32	25-46	Kelso, R.	Identification that Tables 3-1 and 3-2 are not in the section but are referenced in the text.	References to Tables 3-1 and 3-2 have been removed from Section 3.2.2 of the CLUMP. Resource management areas are depicted in figures within this section of the CLUMP.
	24-43	Merk, S.		
13.33	25-47	Kelso, R.	Request to include maps of springs, riparian areas and locations of NAWS special status species, even though they are discussed in text as being in maps	Natural resources management priority areas within NAWSCL ranges are provided in Figures 3-3 and 3-4. A discussion of the priority areas is provided in
	24-44	Merk, S.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			3-3 and 3-4 as part of the "natural resource management areas."	Section 3.2.2 of the CLUMP.
13.34	25-50 24-45	Kelso, R. Merk, S.	Request mapping of management priority levels on Figures 3-3, 3-4, and 3-5.	Natural resources management priority areas and known cultural resources within NAWSCL ranges are provided in Figures 3-3, 3-4, 3-5, and 3-6. A discussion of the priority areas is provided in Section 3.2.2 of the CLUMP.
13.35	25-48 24-46	Kelso, R. Merk, S.	Identification that acreages for test and target areas and overall acreages for the installation do not match the EIS/LEIS.	Text within the CLUMP has been revised as appropriate to reflect the acreages listed in the EIS/LEIS and INRMP.
13.36	25-49 24-17	Kelso, R. Merk, S.	Figures do not appear complete and may be outdated. Request for acreages for surveys and sites as of August 2012.	Figures within the CLUMP reflect the latest information provided in the ICRMP and INRMP.
13.37	25-51 24-49	Kelso, R. Merk, S.	Request meaning of the sentence: "The land use management objectives and guidelines were developed through consultation with participating technical staff from applicable management plans referenced in Section 1.10."	The CLUMP provides the planning and management framework to accommodate the DoN's comprehensive, long-term land use needs for NAWSCL. As part of developing the land use management objectives and guidance, the CLUMP takes into consideration other planning documentation for the Installation, including NAVAIRs Operational Requirement Document, ICRMP, INRMP, Mainsite Master Plan, IRP Plan, Airfield Master Plan, and the Activity Overview Plan.
13.38	25-52 24-50	Kelso, R. Merk, S.	Request information regarding the "installation's policy per OPNAVINST 5090.1C."	The DoN's environmental management regulations are defined in the Navy Environmental Readiness Program Manual (OPNAVINST M-5090.1). As a DoN Installation, NAWSCL must comply with this instruction.
13.39	25-53 24-51	Kelso, R. Merk, S.	Identification that Objective 3-1 Planned Action Item #4 is incorrectly marked as Item #2. Request to know why fire management actions reference the 2004 FEIS and not the current Draft EIS/LEIS. The	The typographical error on Planned Action under Objective 3-1 has been corrected to be #4. CLUMP Goal #3, item #4 has been revised to clarify that NAWSCL is preparing a Fire Management Plan.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			fire management section in the 2004 FEIS is not consistent with the Draft EIS/LEIS fire management planned actions.	Currently, the Installation does not maintain a formal fire management policy but has developed a fire management strategy that supports the NAWSCL mission, while taking natural resource protection into consideration.
13.40	25-54	Kelso, R.	Request information on when the revised BO with regards to the proposed fire management action will be released for public review.	During the re-opened public comment period, the Existing BOs for threatened and endangered species on NAWSCL were provided; the USFWS issued the BO for this action in February 2013.
	24-52	Merk, S.		
13.41	25-55	Kelso, R.	Request to know the definition of an EMD sensitivity map and its location in the CLUMP. EMD sensitivity maps equate to the natural resources management priority areas and known cultural resources within NAWSCL ranges that are provided on Figures 3-3, 3-4, 3-5, and 3-6.	EMD sensitivity maps equate to the natural resources management priority areas and known cultural resources within NAWSCL ranges that are provided in Figures 3-3, 3-4, 3-5, and 3-6.
	24-53	Merk, S.		
13.42	25-56	Kelso, R.	Identification that Goal #4 of the CLUMP listed on Page 1-2 does not match the first sentence of Page 4-1.	Text in Section 4.1 of the CLUMP has been corrected to indicate Goal #2 (rather than goal #4 as currently stated).
	24-54	Merk, S.		
13.43	25-57	Kelso, R.	Identification that the MOA is not provided in Appendix B as referenced in the text. Request definition of the CRNSW/NAWCWD MOA (2011), identification of differences between these MOAs, and information on how they relate to the proposed action and CLUMP update.	Under Section 1.3, Goals, the CNRSW/NAWCWD MOA is in place to increase cooperation and coordination between host and tenant commands for environmental duties and responsibilities at NAWSCL The MOA has been inserted into Appendix B of the CLUMP and was made available during the re-opening of the public review period.
	24-55	Merk, S.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
13.44	25-58	Kelso, R.	Request to provide NAWSINST 11100.1 to the public.	NAWSINST 11100.1 provides guidance in the site approval and project review process. During the re-opened public comment period, NAWSINST 11100.1 was made available for public review. The DoN's environmental management regulations are defined in the Navy Environmental Readiness Program Manual (OPNAVINST M-5090.1). As a DoN Installation, NAWSCL must comply with this instruction.
	24-56	Merk, S.		
13.45	25-59	Kelso, R.	Request clarification of the statement "The installation's environmental review process is undergoing revision with the Commander Navy Region Southwest and Commander Naval warfare center weapons division," and if the revision of the process has yet to be completed. Request a description of the process for public review as part of the EIS/LEIS process.	The DoN's environmental management regulations are defined in the Navy Environmental Readiness Program Manual (OPNAVINST M-5090.1). NAWSCL procedures comply with and implement the DoN's environmental procedures as set forth in OPNAVINST M-5090.1.
	24-57	Merk, S.		
13.46	25-60	Kelso, R.	Request definition of EPMD and NAWSINST 5090.1X. Request the document as part of the public review of the CLUMP update.	EPMD is not used in the EIS/LEIS. NAWSINST 5090.1D is the DoN's Environmental Readiness Manual. The Draft CLUMP was included as Appendix C of the Draft EIS/LEIS.
	24-58	Merk, S.		
13.47	25-61	Kelso, R.	Request a reference or appendix section. Part of the CLUMP update appears to be missing.	A references section has been added to the CLUMP as Chapter 5.
	24-59	Merk, S.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
13.48	25-65	Kelso, R.	Request that the INRMP, ICRMP, revised Biological Opinion, and PA be provided to the public.	The INRMP and ICRMP are available on the NAWSCL EIS/LEIS public website at www.ChinalakeLEIS.com. The October 2012 ICRMP and Programmatic Agreement will be included in the Final EIS/LEIS. The 2000 INRMP and 2011 AICUZ Update were made available for public review during the preparation of the documents. The INRMP was subsequently updated in 2014. The 2013 BO will be included in the Final EIS/LEIS in the appendices.
	25-66	Kelso, R.		
	24-60	Merk, S.		
13.49	24-26	Merk, S.	Second paragraph-Once again, what got "updated" in this draft CLUMP from 2005? Please list changes or clearly identify changes in the text. Otherwise, this is impossible to review if you can't even tell where such changes occurred.	The CLUMP provided with the Draft EIS/LEIS is a preliminary draft. The Final CLUMP will be provided with the Final EIS/LEIS.
13.50	24-37	Merk, S.	Natural Resources: Using a 2000 INRMP is not compliant with Sikes Act statute. Certainly since 2000 the Navy has many revisions to this document that are needed. So therefore, this is not going to be an accurate depiction of the most current status of natural resources plans and management actions for the draft EIS/LEIS and CLUMP. Please provide a revised INRMP as part of this EIS/LEIS release for public review.	The 2000 INRMP was made available for public review as the then-current natural resources management guidance for NAWSCL. The NAWSCL INRMP was updated in 2014.
13.51	24-48	Merk, S.	NR Management "Priorities"? There is nothing on this map or in the legend that has the priority levels clearly mapped. Same for Figures 3-4 and 3-5.	Natural resources management priority areas within NAWSCL ranges are provided in Figures 3-3 and 3-4. A discussion of the priority areas is provided in Section 3.2.2 of the CLUMP.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
13.52	19-3	Fortney, M.	The update to the CLUMP should take the opportunity to reference and deal with the deeper land use issues brought about by adjacency to a military installation.	The CLUMP will address Installation land uses and off-installation compatibility.
13.53	18-12	Howell, J.	Appendices are meant to be material prepared specifically for the EIS/LEIS, and which substantiate fundamental analyses. Appendices are supposed to be analytic and relevant to decision. One appendix isn't even needed as the information is already within the body of the EIS/LEIS. There is no narrative explanation of what the information in Appendixes D, G, and H mean. It is meaningless to just include a bunch of tables, graphs and maps without adequate explanation of them. A few of the Appendixes don't include a bibliography or references cited. Appendixes are complex and voluminous. Are they really needed or can you just reference the data in another location?	Appendices provided in the EIS/LEIS are meant to support environmental analysis provided in the document. No narrative discussion is warranted as these appendices are referenced within the EIS/LEIS so that long lists of species and air quality analysis tables do not overburden the body of the analysis. Consultation letters are referenced to illustrate communication with appropriate regulatory agencies. As appropriate, references are provided. Appendices provided in the EIS/LEIS are meant to support environmental analysis provided in the document. Other source material supporting the EIS/LEIS is maintained in the administrative record for the project.
13.54	4A-2	Austin, M.	Where is the revised CLUMP?	The Draft CLUMP was included in the Draft EIS/LEIS as Appendix C. The final revision of the CLUMP will reflect the decision for the EIS/LEIS, i.e., continue current activities or up to 25 percent increase in mission activities (withdrawal renewal approved as of December 2013).
13.55	4A-3	Austin, M.	Where are the agency reviews and comments?	Agency coordination and consultation are provided in Appendix H of the EIS/LEIS. Comments received from regulatory agencies during the 90-day public review are provided in Chapter 10 of the EIS/LEIS.
13.56	8A-1	Brashear, M.	Comments made specifically to the INRMP. The INRMP requires update in several areas including	The INRMP for NAWSCL has recently been updated and addresses changes in natural resources

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			recreation, hunting, and gem and mineral collection.	management (including recreational uses on NAWSCL) that have occurred since the previous INRMP was completed.
13.57	8A-2	Brashear, M.	There may be unintended consequences of removing burros. Bighorn sheep could be impacted as mountain lion food sources are reduced.	The DoN has recently updated its INRMP for NAWSCL. In doing so--and in preparing required environmental impacts analysis under the National Environmental Policy Act (NEPA), whether for the revised INRMP, the now-approved land withdrawal renewal and DoN-decision components of the Proposed Action, and as a general matter--the DoN has strived and always strives to be mindful of potential unintended consequences. If, in assessing a given proposal under NEPA (as was done prior to implementation of the recently-updated INRMP), the DoN determines that any such unintended consequences would be reasonably likely to occur, it then strives to factor them into its impacts analysis as appropriate. As the Installation moves forward with managing burro herd size, the Navy will continue to monitor bighorn sheep populations as per the INRMP and be prepared to assess any correlations between the two.
13.58	4A-1	Austin, M.	Why does the EIS/LEIS refer to the 2000 INRMP rather than the final draft that was completed in 2008 by NAVAIR?	The draft final INRMP provided by the NAVAIR contractor in 2008 did not adhere to DoN guidance for preparation of INRMP documentation. The 2000 INRMP was made available for public review as the then-current natural resources management guidance for NAWSCL. The NAWSCL INRMP was updated in 2014, including appropriate natural resources information from the 2008 draft INRMP.
13.59	27A-4	Rajtora, S.	The EIS/LEIS needs to provide a scientifically based noise environment using current runway departure frequency and current departure route frequency where the routes conform to the authorized 2007 AICUZ Study Consolidated Departure Alternative	The flight track utilization data for each modeled aircraft were collected through intensive interviews and the validation process with the aviation staffs and the pilots. These data were then used for developing both existing and proposed condition noise contours.
	27A-5	Rajtora, S.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			routes. The logic behind the 2011 AICUZ Update route definition and route utilization is unclear and scientifically questionable.	Detailed utilization data are included in the 2011 AICUZ Update reference document produced by Wyle Laboratories in February 2010 entitled Draft Aircraft Noise Study for Naval Air Weapons Station China Lake, California. As summarized in the EIS/LEIS, the 2011 AICUZ Update model refines accuracy in predicting noise exposure by examining naturally occurring dispersed flight tracks within the departure corridor.
13.60	25A-1	Kelso, R.	The Navy fails to provide the key reference materials supporting the EIS including: • An INRMP dated within the last five years • An ICRMP • A revised/amended Biological Opinion • Programmatic Agreement and Section 106 Consultation • Fire Management Plan • CLUMP	Comments received during the 90-day public comment period indicated that certain key reference materials supporting the environmental impact analysis within the Draft EIS/LEIS had not been available to the public for consideration during the 90-day comment period. Accordingly, on January 11, 2013, the DoN made the documents available to the public and reopened the public comment period for an additional 30 days (January 11, 2013 - February 11, 2013). Notice of the 30-day reopened public comment period was published in the Federal Register on January 11, 2013 (77 FR 2378). The notice was also published in 7 newspapers. During the reopened public comment period, the Draft EIS/LEIS and 16 additional key reference materials were made available for public review including the following documents: • The 2000 INRMP. The INRMP was subsequently updated in 2014. • The October 2012 Final ICRMP. • Existing BOs for threatened and endangered species on NAWSCL. The USFWS issued a BO for this action in February 2013 and it is included

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				in the appendices of the Final EIS/LEIS. • The October 2012 Programmatic Agreement. • NAWSCL does not maintain a formal fire management plan; they address fire management at the Installation in accordance with fire management measures that have been further clarified in the EIS/LEIS. • The Draft CLUMP was included as Appendix C of the Draft EIS/LEIS; the final revision of the CLUMP will reflect the decision for the EIS/LEIS (i.e., continue current activities or up to 25 percent increase in mission activities (approved as of December 2013). • Figures 3-1 and 3-2 of the Draft CLUMP were provided during the reopened public review. These figures show the military land uses for North and South Range. All 16 documents can be found on the project website www.ChinalakeLEIS.com. The reference materials were also forwarded to 6 local libraries for public review. Individuals requesting the reference materials were sent letters with a CD-ROM containing the documents and the Executive Summary from the draft EIS/LEIS. The letter provided the project website where the documents could be downloaded. The letter also notified these individuals that the public comment period would be reopened for another 30 days.
14. ALTERNATIVES				
14.1	27-47	Rajtora, S.	Suggestion of two new alternatives that would have a different AICUZ Study footprint and noise impact level than the Proposed Action and Alternative 2: 1) Airfield tempo is determined by establishing	The DoN respectfully states that it would not be reasonable in light of mission requirements to develop and analyze a distinct alternative based on the concept of a 70 dB noise contour not extending

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			departure routes and runway utilization methodology that limits the 70dB noise contour to extend no further south than Inyokern Road. 2) Western aircraft departure routes pass through the center of the NAWSCL departure corridor, and Runway 14 departures fly straight out on the TACAN route. (Comment also listed under Noise and Vibration)	beyond the point identified in the comment. Given the configuration of the airfield, to do so would amount to imposition of an arbitrary constraint dramatically reducing the DoN's ability to perform its mission. The AICUZ Study defines potential noise and safety impacts of flight operations and makes recommendations for compatible land use to help local communities proactively manage surrounding land use development and protect the sustainability of the NAWSCL mission. With respect to the discussion of westerly departure routes in the second alternative proposed in the comment, the DoN notes that, for its westerly departing flights, there is no determination made as to whether to fly precisely over the center of the departure corridor or not, nor would it be possible to do so. Rather, the departure corridor represents a horizontal range in and over which departing aircraft flights are intended to fly. With respect to the discussion of Runway 14, straight-out departures on Runway 14 would place outbound air traffic in direct conflict with inbound traffic for all runways, thus creating a significant flight safety hazard.
14.2	6-1	Vega, B	The Bishop Paiute Tribal Council recommends ALTERNATIVE 2.	Recommendation acknowledged.
14.3	6-4	Vega, B	The Tribe appreciates the Navy's desire for transfer of ownership of access to the Coso Hot Springs was taken into consideration in the development of alternatives but is disappointed that this alternative was eliminated from further consideration. The Tribe disagrees with this elimination and request that it be the topic of future government to government consultation. The Tribe still feels that transfer of ownership of the Coso Hot Springs land to the Tribes or a Tribal controlled entity should be	The DoN has determined that mission requirements for effective land use controls to ensure safety and security preclude this from being a viable alternative. The DoN will continue government-to-government consultation with Tribal organizations. The DoN respectfully submits that, with respect to potential transfer of the Coso Hot Springs area, the essential consideration is whether the DoN has a
	3-4	Bacock, A.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			included in the range of alternatives when considering future land withdrawal.	continuing need to utilize the property encompassing Coso Hot Springs, and thus to retain oversight and control over the area, or whether the property is instead excess to the DoN's needs. The DoN also respectfully submits that the Coso Hot Springs property is not excess to the DoN's needs, and is in fact essential to the successful continuation of the DoN's mission at NAWSCL, for the reasons set forth below. Coso Hot Springs is routinely within the DoN's overflight and/or safety footprint for range events. This means that the DoN will either be conducting flying operations over the area; or, with respect to safety considerations, that there is a potential for an errant weapon to impact the area, meaning that the kinetic potential of the weapon/asset being tested in a given event is such that either its propulsion system could cause it to enter the Coso Hot Springs area, or its explosive potential could otherwise impact the area. This does not mean that Coso Hot Springs is ever a target area per se. It is not. However, an area of potential impact outside the designated target area (called a "weapons safety footprint," effectively a safety buffer area) is calculated for each test event, based on the kinetic potential of the particular asset to be used in the test. As a practical matter, Coso Hot Springs often lies within the safety buffer area for particular test events. It is also essential for the DoN to maintain oversight and control of access to the Coso Hot Springs area--and to the larger area in the vicinity of Coso Hot Springs generally--for purposes of security. For example, the DoN needs to be able to place sensors or other devices in order to collect data on test events, and subsequently needs to control access to such devices in order to protect the security and accuracy--

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				and thus value--of the data collected. Similarly, it is essential to prevent unauthorized individuals from collecting data or other information concerning test events. Some of the test events conducted nearby have unique sight sensitivity requirements that result in restrictions on access during such events for individuals (including DoN personnel) without an appropriate clearance and "need to know." Further, in the event certain weapons or parts of them enter the Coso Hot Springs area as the result of a test, the DoN needs to have the area secure in order to retrieve these assets, for safety reasons and potentially for security reasons as well. It should be noted that maintaining oversight and control of access to the Coso Hot Springs area is also important with respect to geothermal production. Standard procedure during any Tribal visit to Coso Hot Springs is to temporarily suspend certain operations in certain production areas, to include not unloading wells and not performing standard tests and valve adjustments in such areas, for the duration of the visit. This is done both because of the remote possibility of hydrogen sulfide being released from wells and drifting to Coso Hot Springs, and also to show sensitivity to the values and practices of Tribal visitors to Coso Hot Springs. Unregulated access to Coso Hot Springs could entail reductions in operations to the point that the operator could not meet its contractual power sales obligations. In light of the above, the Coso Hot Springs area is clearly not excess to the DoN's needs, nor would it become excess in the reasonably foreseeable future. Accordingly, the DoN has determined that transfer of Coso Hot Springs would result in the elimination of DoN oversight and control over the area, and therefore would not be compatible with mission

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				essential safety and security requirements. A transfer scenario would entirely surrender control of this mission essential area in close proximity to--and routinely within the weapons safety footprint for--an active military test range. Any such scenario would therefore fail to meet the DoN's purpose and need.
14.4	6-9	Vega, B	The Tribe request government to government consultation to seriously discuss other alternatives to the proposed MOA revision as presented below. It is the Tribes opinion that the Navy has legal authority to implement any of the following options: 1) Conveyance in fee ownership to the Bishop Paiute Tribe or consortium of Tribes organized in a nonprofit land trust. 2) Transfer of administrative responsibility over the land from the Navy to the Bureau of Indian Affairs to hold land in trust for the Tribes 3) Conveyance of a conservation easement to the Tribes or a Tribal land trust 4) Granting a right of access to the Tribes under an improved Memorandum of Understanding with the Navy.	With regard to the first three options, with a need for continued operational use of the military lands at issue, this military land cannot be declared excess and therefore cannot be transferred outside of the Federal Agency by any available legal authority. With respect to the fourth scenario proposed, the DoN notes that it has been actively working with Tribal organizations to further facilitate Tribal access to Coso Hot Springs under a revised access agreement updating the 1979 access-related Memorandum of Agreement. The DoN respectfully submits that, with respect to each of the scenarios described in the comment, the initial and most-essential consideration is whether the DoN has a continuing need to utilize the property encompassing the Coso Hot Springs, and thus to retain oversight and control over the area, or whether the property is instead excess to the DoN's needs. The DoN also respectfully submits that the Coso Hot Springs property is not excess to the DoN's needs, and is in fact essential to the successful continuation of the DoN's mission at NAWSCL, for the reasons set forth below. Coso Hot Springs is routinely within the DoN's overflight and/or safety footprint for range events. This means that the DoN will either be conducting flying operations over the area; or, with respect to safety considerations, that there is a potential for an errant weapon to impact the area, meaning that the kinetic potential of the weapon/asset being tested in a given event is such that either its propulsion system could
	6-11	Vega, B		
	5-14	Moose, V.		
	28-14 34-14	Red Owl, T.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				cause it to enter the Coso Hot Springs area, or its explosive potential could otherwise impact the area. This does not mean that Coso Hot Springs is ever a target area per se. It is not. However, an area of potential impact outside the designated target area (called a "weapons safety footprint," effectively a safety buffer area) is calculated for each test event, based on the kinetic potential of the particular asset to be used in the test. As a practical matter, Coso Hot Springs often lies within the safety buffer area for particular test events. It is also essential for the DoN to maintain oversight and control of access to the Coso Hot Springs area--and to the larger area in the vicinity of Coso Hot Springs generally--for purposes of security. For example, the DoN needs to be able to place sensors or other devices in order to collect data on test events, and subsequently needs to control access to such devices in order to protect the security and accuracy--and thus value--of the data collected. Similarly, it is essential to prevent unauthorized individuals from collecting data or other information concerning test events. Some of the test events conducted nearby have unique sight sensitivity requirements that result in restrictions on access during such events for individuals (including DoN personnel) without an appropriate clearance and "need to know." Further, in the event certain weapons or parts of them enter the Coso Hot Springs area as the result of a test, the DoN needs to have the area secure in order to retrieve these assets, for safety reasons and potentially for security reasons as well. It should be noted that maintaining oversight and control of access to the Coso Hot Springs area is also important with respect to geothermal production. Standard procedure during any Tribal visit to Coso Hot

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				Springs is to temporarily suspend certain operations in certain production areas, to include not unloading wells and not performing standard tests and valve adjustments in such areas, for the duration of the visit. This is done both because of the remote possibility of hydrogen sulfide being released from wells and drifting to Coso Hot Springs, and also to show sensitivity to the values and practices of Tribal visitors to Coso Hot Springs. Unregulated access to Coso Hot Springs could entail reductions in operations to the point that the operator could not meet its contractual power sales obligations. In light of the above, the Coso Hot Springs area is clearly not excess to the DoN's needs, nor would it become excess in the reasonably foreseeable future. Accordingly, the DoN has determined that transfer of Coso Hot Springs (whether as a fee conveyance to a Tribe or consortium of Tribes, or to BIA to be held in trust), or the granting of an easement at Coso Hot Springs for conservation purposes, would result in the elimination or at least significant reduction of DoN oversight and control over the area, and therefore would not be compatible with mission essential safety and security requirements. A transfer scenario would surrender control of this mission essential area entirely, and an easement scenario would allow for unregulated entry into an area in close proximity to--and routinely within the weapons safety footprint for--an active military test range. Any such scenario would therefore fail to meet the DoN's purpose and need. The DoN will continue government-to-government consultation with Tribal organizations, which currently include discussions on updating the 1979 MOA.
14.5	15-3	Goforth K.M.	EPA recommends an alternative to pave and	Paving and lengthening the airfield on the South

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
	15-5	Goforth K.M.	lengthen a South Parcel airfield to accommodate some aircraft operations (thereby reducing noise impacts to the community near Armitage Airfield) if this action is feasible.	Range are not considered feasible as the DoN and other DoD organizations require a dirt landing field to conduct some test and training activities. The facility is an airstrip not an airfield. Establishing a new airfield and associated infrastructure at NAWSCL would be cost prohibitive.
14.6	5-17	Moose, V.	A 25% ramp down in activities is a reasonable alternative which needs to be analyzed.	Based on analysis by NAWCWD for future projected mission activities by the DoN and other DoD organizations, a reduction is not anticipated. The Draft EIS/LEIS includes discussion of a decrease in operations as an alternative considered but not carried forward for full analysis (section 2.2.2.1) because it does not meet the purpose and need. Although DoD's presence in specific regions of the world is decreasing, our presence in other regions is increasing. Those areas that are experiencing increases in military activity will require innovative technological advances to maintain our edge with a smaller, leaner, yet stronger fighting force. The Weapons and Armament Center of Excellence at NAWSCL is a key provider to DoD of technology advances that ensure we maintain that edge. Some areas in specific technologies (such as Unmanned Aerial Systems and Directed Energy (UAS & DE) will experience growth over the lifetime of this EIS/LEIS to ensure we deliver those capabilities to our war fighters. The Operational Requirements Document (ORD) (Appendix B of LEIS) is the reference that captures DoD's current and projected mission requirements at NAWSCL. Per the ORD, requirements are increasing over the baseline from a current tempo of 9,829 to 12,287, unmanned aerial systems (UAS) flight hours increase from 1,587 to 3,136, and munitions R&D events (4.0) increase from 581 to 727, and directed energy (DE) test days increase from 100 to 230 (includes high-energy laser (HEL) and high-
	28-17 34-17	Red Owl, T.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				powered microwave (HPM) operations). For these reasons, a reduction in tempo does not meet the requirements as stated in the Operational Requirements Document.
14.7	18-4	Howell, J.	This section is not based on information/analysis in sections on Affected Environment and Environmental Consequences.	Chapter 2 outlines the proposed action and alternatives, and Table 2-3 provides a summary of environmental consequences based on information in Chapters 3 and 4 of the EIS/LEIS.
14.8	18-5	Howell, J.	The EIS/LEIS does not rigorously explore all reasonable alternatives. Renewal of a reduced amount (perhaps 50% of the 1.03 Million Acres should be studied).	Reducing the area to be withdrawn would not have met the requirements (primarily for public safety) of ongoing and future RDAT&E requirements. Please refer to response to comment 14.6.
	18-6	Howell, J.		
	18-8	Howell, J.		
14.9	18-7	Howell, J.	You haven't adequately stated why certain alternatives were eliminated from detailed study. For example, reasoning is not provided for not studying an integrated training area with the Army or USMC is inadequate.	Section 2.2.2 provides the DoN's rationale as to why alternatives were considered but eliminated from further analysis. Elimination of alternatives was primarily due to not meeting requirements of the purpose and need for the land withdrawal, as well as incompatibility with current and future mission requirements. Integration with other military installations does not meet the specification that Alternatives must be consistent with the goals, policies, and management strategy pertaining to use of the withdrawn lands
14.10	18-9	Howell, J.	You have not included mitigation measures in this section not described elsewhere.	Mitigation measures, as appropriate, are summarized in Table 2-3.
14.11	37A-1	Johnson, C.	The Proposed Action does not adequately allow for OHV opportunities for public recreation on existing BLM land.	Under the Proposed Action, OHV use would continue to be allowed at BLM scheduled public events crossing the Randsburg Wash Access Road. These events are accommodated by the Commanding Officer on a case-by-case basis due to established safety and security requirements. The Proposed Action simply involved a renewal of
	38A-1	Knox, J.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				land that was already withdrawn to continue military test and training. The land withdrawal renewal does not affect other lands managed by BLM for recreational purposes in the surrounding area. The DoN would continue to accommodate nonmilitary uses to the extent that these activities are compatible with military operations; do not create a safety, security, fiscal, or regulatory risk; and do not adversely impact the Installation's natural and cultural resources.
14.12	36A-5	Waiwood, R.	Development of mineral resources within NAWSCL should be considered as an alternative.	Given the security and safety requirements for conducting RDAT&E at NAWSCL, it is unlikely that portions of the ranges could be opened for minerals development. The EIS/LEIS was revised to include discussion of a potential minerals development-related alternative as an alternative 'considered but not carried forward' in Section 2.2.2.
15. OTHER COMMENTS				
15.1	22-1	Michael, D.	Expression of general support for the land withdrawal renewal and its importance to the Department of Defense.	Comment acknowledged.
15.2	1-1	Edward	Complaint that the project website address is not user-friendly.	The public website at www.chinalakeleis.com is intended to provide access to the EIS/LEIS, provide a method to comment on the document, provide applicable backup documentation, and inform the public of upcoming events. The navigation appears fairly simple to access the various sections of the website.
15.3	33-1	Anonymous	Request that posters should include the user-friendly website address for the website referred to in the poster.	The project website address was provided along the bottom of posters, on the brochure, and on the comment sheet used during the public meetings.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
15.4	10-1	Burge, D.	Opinion that the Navy is a good steward of the land.	Comment acknowledged.
15.5	20-1	Lloyd, J	Opinion that the Navy is doing a good job for national defense, and statement that this person has no complaints as a resident living near the northern boundary of NAWSCL.	Comment acknowledged.
15.6	8-1	Brashear, M.	Expression of gratitude for having the Draft EIS/LEIS available in a form of Adobe PDF that allows conversion to word and excel.	Comment acknowledged.
15.7	25-2	Kelso, R.	The Navy needs to lead the resolution of environmental and safety issues in the Indian Wells Valley, as NAWSCL is the principal employer and reason for the majority of the population of the Valley.	The DoN continues to coordinate and cooperate with surrounding city and county entities regarding all matters of mutual concern. The DoN takes the lead to resolve those issues for which it has responsibility under the law.
15.8	25-4	Kelso, R.	Request for a list of preparers of the EIS/LEIS and their qualifications and training.	Qualifications of the list of preparers (contractor personnel) have been added to Chapter 8.
	24-3	Merk, S.		
15.9	25-1 25-67	Kelso, R.	Significant issues, including aircraft safety, noise, groundwater availability, and drainage, need to be addressed in greater detail as well as in a more analytical nature. Recommendation that the Navy retract the public submittal of the EIS/LEIS and resubmit when appropriate data and analysis has been performed and necessary documents are available for public inspection, in order to achieve NEPA compliance, the sustainability of the NAWSCL mission, and public and DoD support.	After further review of the affected environment and environmental consequences sections of the EIS/LEIS, the DoN feels that the potential effects to aircraft safety, noise, groundwater availability, and drainage are appropriately addressed. Appropriate background documentation has been provided on the project website at www.Chinalake LEIS.com. The DoN notes that the Draft EIS/LEIS was re-circulated for public review and comment in conjunction with certain additional reference materials. The DoN does not anticipate further re-circulation of the EIS/LEIS.
15.10	5-15	Moose, V.	The EIS/LEIS needs to explain why a transfer of the relatively small footprint of Coso Hot Springs is a security risk, especially in light of the very large	The DoN has determined that transfer of the Coso Hot Springs resulting in the elimination of DoN oversight and control would not be compatible with mission
	28-15	Red Owl, T.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
	34-15		footprint of geothermal production which seems not to be a problem as a security risk for NAWS. It also needs to be explained in detail why the land ownership transfer proposal did not meet the Navy's identified purpose and need for the undertaking.	requirements for effective land use controls to ensure safety and security. The DoN respectfully submits that, with respect to potential transfer of the Coso Hot Springs area, the essential consideration is whether the DoN has a continuing need to utilize the property encompassing Coso Hot Springs, and thus to retain oversight and control over the area, or whether the property is instead excess to the DoN's needs. The DoN also respectfully submits that the Coso Hot Springs property is not excess to the DoN's needs, and is in fact essential to the successful continuation of the DoN's mission at NAWSCL, for the reasons set forth below. Coso Hot Springs is routinely within the DoN's overflight and/or safety footprint for range events. This means that the DoN will either be conducting flying operations over the area; or, with respect to safety considerations, that there is a potential for an errant weapon to impact the area, meaning that the kinetic potential of the weapon/asset being tested in a given event is such that either its propulsion system could cause it to enter the Coso Hot Springs area, or its explosive potential could otherwise impact the area. This does not mean that Coso Hot Springs is ever a target area per se. It is not. However, an area of potential impact outside the designated target area (called a "weapons safety footprint," effectively a safety buffer area) is calculated for each test event, based on the kinetic potential of the particular asset to be used in the test. As a practical matter, Coso Hot Springs often lies within the safety buffer area for particular test events. It is also essential for the DoN to maintain oversight and control of access to the Coso Hot Springs area--and to the larger area in the vicinity of Coso Hot
	3-5	Bacock, A.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				Springs generally--for purposes of security. For example, the DoN needs to be able to place sensors or other devices in order to collect data on test events, and subsequently needs to control access to such devices in order to protect the security and accuracy--and thus value--of the data collected. Similarly, it is essential to prevent unauthorized individuals from collecting data or other information concerning test events. Some of the test events conducted nearby have unique sight sensitivity requirements that result in restrictions on access during such events for individuals (including DoN personnel) without an appropriate clearance and "need to know." Further, in the event certain weapons or parts of them enter the Coso Hot Springs area as the result of a test, the DoN needs to have the area secure in order to retrieve these assets, for safety reasons and potentially for security reasons as well. It should be noted that maintaining oversight and control of access to the Coso Hot Springs area is also important with respect to geothermal production. Standard procedure during any Tribal visit to Coso Hot Springs is to temporarily suspend certain operations in certain production areas, to include not unloading wells and not performing standard tests and valve adjustments in such areas, for the duration of the visit. This is done both because of the remote possibility of hydrogen sulfide being released from wells and drifting to Coso Hot Springs, and also to show sensitivity to the values and practices of Tribal visitors to Coso Hot Springs. Unregulated access to Coso Hot Springs could entail reductions in operations to the point that the operator could not meet its contractual power sales obligations. In light of the above, the Coso Hot Springs area is clearly not excess to the DoN's needs, nor would it

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				become excess in the reasonably foreseeable future. Accordingly, the DoN has determined that transfer of Coso Hot Springs would result in the elimination of DoN oversight and control over the area, and therefore would not be compatible with mission essential safety and security requirements. A transfer scenario would entirely surrender control of this mission essential area in close proximity to--and routinely within the weapons safety footprint for--an active military test range. Any such scenario would therefore fail to meet the DoN's purpose and need. In comparison, geothermal production at NAWSCL does not present a security risk, in that it takes place within a context of continuing federal ownership of the property in question, under DoN oversight and control within the boundaries of the installation. The DoN is able to coordinate range events with the operators of the geothermal production facilities, and is able to oversee both who gains access to the installation in association with geothermal production, and the extent to which such individuals gain access.
15.11	5-20	Moose, V.	Change Big Pine Reservation to Big Pine Paiute Tribe of the Owens Valley.	Big Pine Reservation has been changed to Big Pine Paiute Tribe of the Owens Valley in Chapter 7 of the EIS/LEIS.
	3-12	Bacock, A.		
15.12	24-1	Merk, S.	This EIS and LEIS clearly should have been two separate documents and the LEIS should have included the last Record of Decision for comparison in the LEIS.	The DoN did not want to segment the two related actions of land renewal and continuing mission activities at NAWSCL. The EIS/LEIS is a valid approach for evaluating the potential effects of implementing the legislative decision regarding the renewal of the land withdrawal (approved as of December 2013) and the DoN decision regarding potentially increasing mission activities by up to 25 percent.
15.13	18-1	Howell, J.	The EIS/LEIS does not identify the cooperating	BLM is identified on the Cover Sheet as a cooperating

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			agency BLM assisting with this project CEQ requires a one-paragraph abstract. Cover sheet does not identify when comments must be received Regarding agency-specific requirements, you have not provided a proper reference to the Department of Navy Order for this installation. Include that item in your references cited.	agency. The cover sheet provides the appropriate contact for purposes of providing comments; the NOA for the release of the EIS/LEIS or public review provided the dates of the review period and date when comments must be received. The commenter does not specify which DoN Order is to be referenced; consequently, no addition has been made to the reference list.
15.14	18-2	Howell, J.	CEQ requires the summary to be less than 15 pages. Major conclusions are not stated and areas of controversy are not stated. Issues raised by agencies, by the public, and those to be resolved are not stated.	The Executive Summary is only 7 pages in length. Conclusions are specified in the Executive Summary and in the summary of influencing factors and environmental impacts table (see Tables ES-1, ES-2, and ES-3, and Tables 2-2 and 2-3). A discussion has been added to Chapter 1 (Section 1.7) that summarizes the primary issues raised during the public review and sections of the EIS/LEIS that incorporated revisions.
15.15	18-3	Howell, J.	The EIS/LEIS does not relate the Purpose & Need to alternatives including the proposed action.	Within the Executive Summary, selection criteria are discussed for the alternatives on page ES-3, where the purpose and need is related to the alternatives.
15.16	12-36	Clark, J.	*Desire to see cumulative and indirect impacts analyzed for each fully analyzed alternative* – Indirect impacts are only minimally analyzed in each resource section. The discussion of cumulative impacts is also very weak and incomplete.	Within Chapter 4, a discussion of cumulative impacts is provided for each alternative for each resource. Also in Chapter 4, an impact summary and a table are provided at the end of each alternative for each resource. The analysis of impacts in the EIS/LEIS, including cumulative and indirect impacts, complies with the regulatory standard at 40 CFR 1508.7 and 40 CFR 1502.16.
	12-38	Clark, J.		
15.17	12-37	Clark, J.	*Cumulative impacts of the withdrawal of public lands for DoD installations throughout* So. *California* – This significant concern raised by the public during	Text has been added to Section 2.4 regarding DoD land withdrawals in Southern California that are planned or have recently been approved. Text has

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			scoping has been ignored in the EIS/LEIS. Military withdrawal of public lands within the region must be acknowledged and fully analyzed in the EIS/LEIS.	also been added to the Chapter 4 sections discussing cumulative resources regarding potential cumulative effects of other DoD land withdrawal activities in the region.
15.18	12-39	Clark, J.	*Desire for documentation of current stewardship practices, all resource monitoring, and reporting during current land withdrawal* - A complete multi-resource monitoring plan should be developed and provided as an appendix to the Final EIS/LEIS.	A mitigation monitoring report will be prepared for all mitigation measures implemented for the selected alternative. The report would also be revised as needed to account for any further measures that might be implemented subsequently.
15.19	12-40	Clark, J.	*Consideration for a joint NEPA/California Environmental Quality Act (CEQA) document* - This issue raised by the public during scoping has not been acknowledged, mentioned, addressed or analyzed in the EIS/LEIS.	Because the actions addressed within the EIS/LEIS are strictly federal in nature, and because federal actions are not subject to CEQA, NEPA is the statutory authority to follow for purposes of assessing the anticipated environmental effects of land withdrawal renewal and potential mission increase. The California Desert Protection Act required that "[n]o later than eighteen years after the date of enactment of this title, the Secretary of the DoN shall publish a draft environmental impact statement concerning continued or renewed withdrawal" of lands withdrawn by the Act for military purposes at NAWSCL. This Congressional mandate clearly indicates that it is the Federal NEPA process to be followed, that is, preparation of an EIS.
15.20	12-42	Clark, J.	*Consideration for BLM to have a lead role in the LEIS process*- The Final EIS/LEIS should include an appendix with the 1994 Memorandum of Agreement between the Secretary of the Navy and the Bureau of Land Management (BLM). Despite the public raising this important issue during scoping, the EIS/LEIS has not addressed the rationale for BLM not assuming the lead role on this current military land withdrawal EIS/LEIS. The Final EIS/LEIS must also address the nature and extent of BLM's future role if the withdrawal is renewed. For example, will	Section 1.2.1 of the EIS/LEIS outlines the process of land withdrawal renewal. The DoN notes that, under the California Desert Protection Act, it was directed by Congress to "publish (the) draft environmental impact statement concerning continued or renewed withdrawal" of lands at NAWSCL. BLM's involvement as a cooperating agency in the development of the EIS/LEIS was triggered by its current jurisdiction by law, and special expertise with

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			the 1994 Memo of Agreement be updated? Will a revision or amendment be needed to the CDPA or other Resource Management Plan? Will the BLM be charged with any other management responsibilities? What will the cost be of such measures?	respect to, the lands previously withdrawn for NAWSCL; its receipt of a public lands withdrawal application; and its responsibilities under Section 204 of the Federal Land Policy and Management Act of 1976 and the California Desert Protection Act. The 1994 MOA, California Desert Protection Act revisions, and BLM management responsibilities are beyond the scope of the analysis of environmental impacts set forth in the EIS/LEIS pursuant to NEPA.
15.21	12-43	Clark, J.	To facilitate our Nation's need for energy independence, the Final EIS/LEIS should determine if any of the 1.03 Million acres proposed for continued withdrawal can be opened to any surface entry, geothermal, mining, mineral leasing, or Materials Act of 1947.	Determining where economically viable mineral resources extraction could be accommodated within the boundaries of NAWSCL is outside the scope of the EIS/LEIS as these activities do not meet the purpose or need of the withdrawal. Portions of NAWSCL have been withdrawn from all forms of appropriation under the public land laws, (including the mining laws and the mineral leasing laws) since 1947, and under the current NAWSCL boundary, since October 31, 1994, the date of the CDPA. The North Range is considered a valuable geothermal resource and, as such, an area is currently active with four producing geothermal steam power plants. Current statutory authorities allow development of geothermal resources within NAWSCL. Notwithstanding whether or to what extent development or further development of mineral resources could potentially take place at NAWSCL subsequent to the now-approved renewal of the land withdrawal for the installation, the DoN's perspective is that any such potential minerals-related exploration and/or development on NAWSCL would likely be incompatible with the DoN's mission requirements. The EIS/LEIS was revised to include discussion of a

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				potential minerals development-related alternative as an alternative 'considered but not carried forward' in Section 2.2.2.
15.22	18-13	Howell, J.	The EIS/LEIS should disclose to who the draft EIS/LEIS was sent. EISs are normally less than 150 pages (300 pages for proposals of unusual scope or complexity). The Draft EIS/LEIS is much longer and clearly not in compliance with CEQ regulations. Your preparers list doesn't include a few military disciplines appropriate to scope and issues identified in the scoping process. For example, who wrote the purpose and need? A better write-up is needed for the training section and need for the action? The DEIS was not "written in plain language". It is full of military jargon, acronyms and more. I liked some of the graphics for clarity, but many are cluttered and confusing. Some of the maps and graphics are poor and hard to decipher. The EIS should include incomplete information essential to making a reasoned choice among alternatives. The EIS does not identify where the information is incomplete, along with where relevant information is missing. Where information is incomplete or missing, you must state that it is unavailable, its relevance, and summarize existing credible info. In some cases, you have failed to evaluate impacts based on generally accepted data or methods. An example is that you have failed to quantify how much energy production and recreation use could occur on that public land if the withdrawal was not	The distribution list is provided in Chapter 9. The EIS/LEIS is larger due to the complexity of addressing both land withdrawal renewal and proposed mission increase in one document. The purpose and need statements underwent numerous revisions at the highest command levels within the DoN to ensure an accurate purpose and need statement was presented that reflects the requirements of the DoN. The DoN has written as much of the document as possible “in plain language”. Due to the nature of military operations, use of military terms and acronyms are necessary so that the decision maker can make an informed decision; where appropriate, the EIS/LEIS attempts to clarify military terminology in non-technical language. Maps presented within the EIS/LEIS will be reviewed for clarity and revised as appropriate and to the extent practicable. Best available information was used in the preparation of the EIS/LEIS. Determining how much energy production and recreational use could have occurred with no land withdrawal is speculative and beyond the scope of the EIS/LEIS. The difficulty of making any such determination is exacerbated by the fact that cleanup of range residue would be required over a long period of time before the land could be opened for nonmilitary uses. Because the public land withdrawal reauthorization has already occurred, the No Action Alternative as presented in the Draft EIS/LEIS is no

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			renewed. The EIS should cut down on bulk by incorporating material by reference when possible. The EIS should avoid repetitive discussions by identifying other statements it is tiered to. The EIS is not analytic. CEQ regulations requires you to be "not encyclopedic" The EIS should discuss impacts in proportion to their significance. You have pages and pages of information on air quality but then conclude "less than significant" impacts (except for Alternative 3). The geological resources sections should also be drastically cut back if all impacts for all alternatives are truly "less than significant." However, that may not be the case because you have failed to adequately address fault lines, earthquakes, ground movement and vibrations. The EIS should assess impacts of USMC rather than justifying decisions already made. Much of the EIS appears to attempt to justify the "preferred" alternative, rather than look harder at alternatives that would meet the Navy's mission with a reduced amount of land (25, 50 or 75 percent of the existing 1.03 Million Acres withdrawn). You have not conducted or included a cost-benefit analysis incorporated by reference. The EIS does not identify and reference all the methodologies and scientific sources used. The EIS should document the finding and conclusions of all required surveys and reports prepared concurrently. These are to comply with the Fish and Wildlife Coordination Act, National Historic Preservation Act, Endangered Species Act, and other laws and executive orders lists all Federal	longer representative of “no action” conditions at NAWSCL; therefore, the discussion of potential impacts associated with the No Action Alternative as presented in the Draft EIS/LEIS has been removed (please see discussion in Section 2.3.3). The EIS/LEIS incorporates information by reference where appropriate; however, for the decision maker to understand the potential effects, necessary detail is provided. The EIS/LEIS provides the same level of detail for each alternative in accordance with NEPA. The EIS/LEIS provides the appropriate detail to conclude significance of a potential impact. The EIS/LEIS incorporates information by reference where appropriate; however, for the decision maker to understand the potential effects, necessary detail is provided. Seismic hazards are discussed in Section 3.6.5, Seismicity and Seismic Hazards. Based on analysis by NAWCWD for future projected mission activities by the DoN and other DoD organizations, a reduction in future operations would not meet the DoN’s purpose and need, and accordingly would not represent a reasonable alternative. The DoN notes that discussion of a reduction in operations is included in the EIS/LEIS’ discussion of alternatives considered but not carried forward for full analysis. Additionally, it should be noted that the EIS/LEIS does analyze potential environmental consequences associated with a reduction in mission activities, insofar as the No Action Alternative discusses a scenario under which there would have been no renewal of withdrawn lands at the installation. (As noted above, discussion of impacts associated with the No Action Alternative has been deleted from the Final EIS/LEIS.)

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			permits, licenses, and other entitlements needed. For example what are the results of the Biological Assessment, Biological Opinion, cultural resource surveys and consultation with the SHPO?	A cost benefit analysis is not required under NEPA. If such an analysis had been conducted for the alternatives, that information would be incorporated. The approach to analysis is presented at the beginning of each resource section in Chapter 4. A bibliography of sources used in the preparation of the EIS/LEIS is provided in Chapter 6. The findings of recent surveys/studies as well as the status and/or outcome of consultation with appropriate agencies and organizations are disclosed within the appropriate sections of the EIS/LEIS (e.g., cultural resources, biological resources) with references provided as appropriate.
15.23	18-14	Howell, J.	The EIS/LEIS does not comply with Executive Orders 11990, 11988, 12898, 13007. The EIS/LEIS should include a Glossary and an Index. The EIS/LEIS should consistently provide metric measurements (with English units in parens).	The DoN respectfully notes that the EIS/LEIS does address EO 11990 regarding protection of wetlands (see Sections 3.4 and 4.4); EO 11988 regarding floodplains (see Sections 3.7 and 4.7); EO 12898 regarding environmental justice (see Sections 3.8 and 4.8); and EO 13007 regarding Indian Sacred Sites (see Sections 3.5 and 4.5). A Glossary and Index have been added as Chapters 11 and 12, respectively. The EIS/LEIS provides English units, with metric measurements in parenthesis.

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
15.24	18-20	Howell, J.	It is unclear how many total pages are in this chapter, but it is not "succinct description" as required by CEQ regulation. This chapter should be "no longer than necessary to understand the effects of alternatives". In sections where you conclude No Impacts or Less than Significant Impacts, you should make those Affected Environment sections much more succinct. These sections are to be "commensurate with importance of impacts". In sections where you conclude No Impacts or Less than Significant Impacts, you should make those Affected Environment sections much more succinct. The Draft EIS/LEIS is inadequate because you have not attempted to "summarize, consolidate, or reference less important material" in accord with CEQ regulations The Draft EIS/LEIS is inadequate because you have not attempted to "concentrate effort and attention on the important issues" per CEQ regulations	The DoN considers the Affected Environment section to be accurate and to provide the necessary discussion for each resource for the reader to understand the current conditions (baseline conditions) at and around NAWSCL. Where appropriate, the EIS/LEIS cross references with other sections of the document. An Executive Summary is provided at the beginning of the EIS/LEIS, a summary of influencing factors and environmental impacts is provided in Table 2-2, and a summary of impacts is provided in Chapter 4 for each environmental resource.
15.25	18-21	Howell, J.	This section is meant to be the scientific and analytic basis for comparison of alternatives. You have failed to show the adverse effects which cannot be avoided. While some direct effects are shown, you have not provided thresholds (in terms of quantification, scope, magnitude, duration, intensity) to clearly show their significance with substantiated conclusions. The EIS/LEIS does not indicate indirect effects and significance. The EIS/LEIS does not show conflicts with various laws, other plans and policies.	The analysis presented in the Environmental Consequences section overlays the activities associated with each of the alternatives to the existing affected environment to determine potential impacts. Adverse effects and suggested mitigation measures are provided as appropriate. Section 5.3 discusses unavoidable adverse effects. Where appropriate, the EIS/LEIS quantifies potential effects (e.g., noise, air quality, traffic) with associated thresholds of either significance or potential significance. Indirect effects of implementing the alternatives are disclosed within Chapter 4 of the EIS/LEIS. The DoN respectfully states its belief that the level of discussion

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
			The EIS/LEIS should analyze and quantify the energy requirements and conservation potentials of alternatives and mitigation measures. The EIS/LEIS does not indicate the natural or depletable resource requirements and conservation potentials of alternatives and mitigation measures The EIS/LEIS should show the urban quality, historic and cultural resources, and design of the built environment, including reuse and conservation potential of alternatives and mitigation measures. The EIS/LEIS does not show adequate mitigation measure. What are your plans for land purchase, signing, boundary marking, law enforcement support, public outreach, planning, coordination, a public committee to provide oversight in the restricted area? The section on cumulative impacts is not complete. There are many additional projects that have not been included. The Final EIS/LEIS should list foregone opportunities as a result of the military land withdrawal. For example, see the latest list of wind, solar, geothermal projects maintained by BLM. The EIS/LEIS should use conditional language (e.g., "Would" instead of "Will") when describing the proposed action, alternatives, impacts and the future. For example your "Environmental Consequences" section has many instances of the word "will" when it should be "would" in the majority of cases, especially in reference to impacts. This use of "will" instead of "would" is very prevalent in the geology, transportation, airspace and biology sections of chapter 4.	in this regard is in keeping with requirements of NEPA. NAWSCL maintains a CLUMP, which provides the long-term strategic management framework (including AICUZ Study stipulations) to accommodate the ongoing and evolving military mission, to conserve and protect environmental resources, to avoid conflicts with relevant laws, and to facilitate the land use management process. Section 5.4 specifies energy requirements and conservation potential of the alternatives. Mitigation measures are presented as appropriate in Chapter 4. Section 5.1 specifies irreversible or irretrievable commitment of resources. Chapters 3 and 4 discuss the affected environment and environmental consequences for the urban quality, historic and cultural resources, and design of the built environment at NAWSCL and surrounding environments, and disclose mitigation measures as appropriate. Where required, the EIS/LEIS identifies mitigation measures. Table ES-3 provides an outline summary of mitigation measures, including benefit, implementation, and responsible agency. An appropriate range of projects has been addressed in the cumulative impacts discussion sections, based on research and agencies (including BLM) contacts for cumulative projects in the region. The use of “would” is the preferred term to use in Chapters 2 and 4. Where the DoN will absolutely perform a specific effort, the term “will” is appropriately used. Text has been revised for the proper use of “would” and “will.”

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
15.26	27A-1	Rajtora	No additional information regarding departure crash envelopes is contained in the supplemental information. This information needs to be provided in order for the public to make an informed review of the EIS/LEIS.	The 2011 AICUZ Update is approved and is the document of standing at this time for aircraft operations from Armitage Airfield. The AICUZ Study provides the DoN's detailed analysis of accident potential zones and related aircraft history events at NAWSCL. Additionally, accident events were discussed in sections 3.10.5 and 4.10.2.1 of the Draft EIS/LEIS. This discussion will be found in the Final EIS/LEIS under Public Health and Safety section. The DoN provides AICUZ studies so cities, counties, and residents can make informed land use decisions in areas impacted by airfield operations (areas over which departing and arriving aircraft fly). Local governments have jurisdiction over off-installation land use and can choose which, if any, AICUZ Study recommendations to implement out of concern for public health, safety, and welfare and the sustainability of the DoN mission.
15.27	27A-2	Rajtora	There should be a clear justification for a request for a 25% increase in authorized operational tempo.	The DoN continuously reviews RDAT&E requirements to determine specific operational requirements. The specific levels of RDAT&E and training activities included as part of the Proposed Action are based on current knowledge of priorities for future testing and training at NAWSCL and the flexibility to handle reasonably foreseeable increases in RDAT&E and training tempo. An extensive needs assessment was conducted that integrated input from NAWSCL and NAWCWD managers, customers, and staff, who were consulted to identify mission needs and potential improvements. Although DoD's presence in specific regions of the world is decreasing, our presence in other regions is increasing. Those areas that are experiencing increases in military activity will require innovative technological advances to maintain our

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				edge with a smaller, leaner, yet stronger fighting force. The Weapons and Armament Center of Excellence at NAWSCL is a key provider to DoD of technology advances that ensure we maintain that edge. Some areas in specific technologies (such as Unmanned Aerial Systems and Directed Energy (UAS & DE) will experience growth over the lifetime of this EIS/LEIS to ensure we deliver those capabilities to our war fighters. The Naval Air Warfare Center Weapons Division Operational Requirements Document (ORD) (Included in Appendix B of EIS/LEIS) is the reference that captures DoD's current and projected mission requirements at NAWSCL. Per the ORD, requirements are increasing over the baseline from a current tempo of 9,829 to 12,287, unmanned aerial systems (UAS) flight hours increase from 1,587 to 3,136, and munitions R&D events (4.0) increase from 581 to 727, and directed energy (DE) test days increase from 100 to 230 (includes high-energy laser (HEL) and high-powered microwave (HPM) operations). For these reasons, a reduction in tempo does not meet the requirements as stated in the Operational Requirements Document.
15.28	4A-4	Austin	The NAVAIR operations section seems somewhat abbreviated; however, military testing is the reason for land withdrawal.	Chapter 2 summarizes proposed operational activities to allow the public to understand the fundamental requirements of RDAT&E that occurs at NAWSCL. Appendix B of the EIS/LEIS provides the Naval Air Warfare Center Weapons Division Operational Requirements Document, which provides greater detail on operations.
15.29	25A-2	Kelso, R.	Nothing in the Draft EIS has been revised and none of the public comments have been addressed. How and when will prior comments be addressed?	No revisions were made to the Draft EIS/LEIS prior to the re-opening of the public comment period, in order to maintain consistency with what was provided to the public during the initial comment period. Comments received during the 90-day public review of the Draft
	25A-3	Kelso, R.		

Table 10.1-2
Comment Response Matrix

NO.	DOCUMENT NO-COMMENT NO.	COMMENTER	COMMENT	RESPONSE
				EIS/LEIS and during the second round of public review have been considered and incorporated into the Final EIS/LEIS, which will be made available to the public.
15.30	25A-4	Kelso, R.	Several issues still need to be resolved including aircraft safety, noise, groundwater availability, and drainage.	After further review of the affected environment and environmental consequences sections of the EIS/LEIS, the DoN finds that the potential effects to aircraft safety, noise, groundwater availability, and drainage are adequately analyzed under applicable regulatory standards for preparation of an EIS.
15.31	25A-5	Kelso, R.	Recommendation to retract the public submittal of the EIS/LEIS and resubmit when appropriate data and analysis has been performed.	Appropriate background documentation was provided on the project website at www.Chinalakeleis.com. The Draft EIS/LEIS was resubmitted for public review from January 11, 2013 to February 11, 2013. Comments received from the second round of public review were considered during the preparation of the Final EIS/LEIS.

1
2

Document 1

AECOM PUBLIC MEETING

TRANSCRIPT OF PUBLIC COMMENT

TUESDAY, OCTOBER 2, 2012

Marriott Spring Hill Suites

Large Conference Room

113 East Sydnor Avenue, Ridgecrest, CA

Document 1

1
15.2

EDWARD: The only observation is that the poster that has the website information on it does not have a user-friendly address.

Document 1

REPORTER'S CERTIFICATE

I, Mary Anne Young, a Certified Shorthand Reporter for the State of California, do hereby certify:

That the foregoing comment was reported by me stenographically and were transcribed through computerized transcription under my direction; and the foregoing is a true and correct record of the testimony and proceedings taken at that time.

IN WITNESS WHEREOF, I have subscribed my hand this 9th day of October, 2012.

Mary Anne Young

MARY ANNE YOUNG, CSR NO. 12799

Document 1

A
address (1) 2:3
AECOM (1) 1:1
Anne (2) 3:3,15
Avenue (1) 1:6

C
CA (1) 1:6
California (1) 3:4
CERTIFICA... 3:1
Certified (1) 3:3
certify (1) 3:4
comment (2) 1:2 3:5
computerized ... 3:6
Conference (1) 1:5
correct (1) 3:8
CSR (1) 3:15

D
day (1) 3:11
direction (1) 3:7

E
East (1) 1:6
EDWARD (1) 2:1

F
foregoing (2) 3:5 3:7

H
hand (1) 3:10
Hill (1) 1:4

I
information (1) 2:2

L
Large (1) 1:5

M
Marriott (1) 1:4
Mary (2) 3:3,15
MEETING (1) 1:1

O
observation (1) 2:1
October (2) 1:3 3:11

P
poster (1) 2:2
proceedings (1) 3:8
PUBLIC (2) 1:1 1:2

R
record (1) 3:8
reported (1) 3:5
Reporter (1) 3:4
REPORTER'... 3:1
Ridgecrest (1) 1:6
Room (1) 1:5

S
Shorthand (1) 3:3
Spring (1) 1:4
State (1) 3:4
stenographica... 3:6
subscribed (1) 3:10
Suites (1) 1:4
Sydnor (1) 1:6

T
taken (1) 3:9
testimony (1) 3:8
time (1) 3:9
transcribed (1) 3:6
TRANSCRIP... 1:2
transcription (... 3:7
true (1) 3:8
TUESDAY (1) 1:3

U
user-friendly (1) 2:3

W
website (1) 2:2
WHEREOF (1) 3:10
WITNESS (1) 3:10

Y
Young (2) 3:3,15

1
113 (1) 1:6
12799 (1) 3:15

2
2 (1) 1:3
2012 (2) 1:3 3:11

9
9th (1) 3:11

CHINALAKE PUBLICCOMMENTS/001

AECOM PUBLIC MEETING
TRANSCRIPT OF PUBLIC COMMENT
THURSDAY, OCTOBER 4, 2012
Statham Hall Senior Center
138 Jackson Street, Lone Pine, CA

JOHN ROTHGEB: (From Darwin) I just referenced them with the page number and line number and then I made screen shots so I could -- so I would ready. So I'll just read these four comments and then I'll show you on the pieces of paper.

1 This first one is page 4.7-4, lines 29 and 30, and I suggest striking "seeking a renewed agreement to
7.1 access the spring in perpetuity," and replacing it with "recommending an easement for the full 25-year period of the CLUMP." And the reason is because, of course, you don't have control in perpetuity so you can't --

CAPTAIN LAZAR: Well, I mean, you can put it in there. It would have to take action to be overturned same as anything else, but it sure makes more sense.

JOHN ROTHGEB: And the point being that five years -- right now, we have a five-year easement, which is fine, and we get along with you guys great and we appreciate everything you do for us.

CAPTAIN LAZAR: Good deal.

JOHN ROTHGEB: I'm not making complaints.

CAPTAIN LAZAR: Right.

2 JOHN ROTHGEB: But we want to get the document
7.2 right, and I assume you can't really give us an easement based on your CLUMP until you get the CLUMP, but what we recommend or seek would be, I said, "recommending an

2 easement for the full period of 25 year CLUMP," so I
7.2 just thought that would be a change.

CAPTAIN LAZAR: That's a great recommendation. We can certainly take a look at that.

JOHN ROTHGEB: Now there are three places
3 where -- two places where other springs were mentioned -- other springs and seeps. You mentioned the Old House spring and how that's used and another spring
7.3 which provides water for construction, et cetera, so you mentioned those springs. It seems like our springs should also be mentioned as water is currently extracted from the Coso Springs for domestic use.

CAPTAIN LAZAR: Just to add in to the rest.

JOHN ROTHGEB: Just to be complete there.

CAPTAIN LAZAR: All right.

JOHN ROTHGEB: And also under -- okay. I forgot to read the page number for that one. And one I just mentioned was -- okay. I mentioned page 3.7-9, line 23, and then I mentioned page 3.4-24, line 22 after "rainfall."

CAPTAIN LAZAR: Is it possible to just give this to Mary Anne and she can just type this right in?

JOHN ROTHGEB: I actually put one in there.

CAPTAIN LAZAR: Good deal.

JOHN ROTHGEB: But I feel real good about

being able to show you that.

CAPTAIN LAZAR: I'm right here for this.

JOHN ROTHGEB: Under "Riparian and Other Water-Related Habitats," it's the same thing. We have the spring for the junction ranch and other springs, and as I said, we need to put Darwin in there just to be complete.

CAPTAIN LAZAR: Okay.

JOHN ROTHGEB: Because this is like 25 years.

CAPTAIN LAZAR: Okay.

JOHN ROTHGEB: I don't know where I'm going to be in 25 years.

4 And then under "On-Installation Non-Military Land Uses," there's four sub-headings on here, and what we're looking at right now is page 3.1-13 under the heading 3.1.7, "On-Installation Non-Military Land Uses"
1.1 at sub-heading 3.1.7.X -- I'm not telling you what number to use -- where Darwin will supply for -- at "Darwin Water Supply," the sub-heading, and then insert "the Darwin Community Services District has the rights to access its historical water source," blah, blah, blah.

CAPTAIN LAZAR: Right.

JOHN ROTHGEB: So I thought that would be under the non-military use.

CHINALAKE PUBLICCOMMENTS/002

Document 2

CAPTAIN LAZAR: I think all that stuff makes perfect sense.

JOHN ROTHGEB: Okay.

CAPTAIN LAZAR: That is an outstanding suggestion. In fact, it's like you're doing our work for us. That's awesome.

JOHN ROTHGEB: Well, I think you guys did an awesome job too.

CAPTAIN LAZAR: I really appreciate you coming out here.

JOHN ROTHGEB: I feel like we work together.

CAPTAIN LAZAR: That's what we do. Those are fantastic. Definitely put those in and we'll consider them and get them in there.

JOHN ROTHGEB: So I'll give you a copy. I'll give the court reporter a copy of that in case she wants to do whatever she does.

Document 2

5
1.2

MR. LAEMMLE: My name is Michael Laemmle, and I'm the President of the Darwin Community Services District, and what I'd like to do is request that we have a 25-year withdrawal of our water rights, the same as the bases are having a 25-year withdrawal from beyond, that we also at the same time have a withdrawal for our easement to the base for 25 years. That's basically all I want to say.

Document 2

REPORTER'S CERTIFICATE

I, Mary Anne Young, a Certified Shorthand Reporter for the State of California, do hereby certify:

That the foregoing comment was reported by me stenographically and were transcribed through computerized transcription under my direction; and the foregoing is a true and correct record of the testimony and proceedings taken at that time.

IN WITNESS WHEREOF, I have subscribed my hand this 9th day of October, 2012.

MARY ANNE YOUNG, CSR NO. 12799

Document 2

A
able (1) 4:1
access (2) 2:8 4:21
action (1) 2:13
add (1) 3:13
AECOM (1) 1:1
agreement (1) 2:7
Anne (3) 3:22 7:3,15
appreciate (2) 2:18 5:9
assume (1) 2:23
awesome (2) 5:6 5:8

B
base (1) 6:7
based (1) 2:24
bases (1) 6:5
basically (1) 6:8
beyond (1) 6:6
blah (3) 4:21,21 4:22

C
CA (1) 1:5
California (1) 7:4
CAPTAIN (16) 2:12,19,21 3:3 3:13,15,21,24 4:2,8,10,23 5:1 5:4,9,12
case (1) 5:16
Center (1) 1:4
certainly (1) 3:4
CERTIFICA... 7:1
Certified (1) 7:3
certify (1) 7:4
ceters (1) 3:9
change (1) 3:2
CLUMP (4) 2:10,24,24 3:1
coming (1) 5:9
comment (2) 1:2 7:5
comments (1) 2:4
Community (2) 4:20 6:2
complaints (1) 2:20
complete (2) 3:14 4:7
computerized ... 7:6
consider (1) 5:13
construction (1) 3:9
control (1) 2:11
copy (2) 5:15,16
correct (1) 7:8
Coso (1) 3:12
course (1) 2:10
court (1) 5:16
CSR (1) 7:15
currently (1) 3:11

D
Darwin (6) 2:1 4:6,18,19,20 6:2
day (1) 7:11
deal (2) 2:19 3:24
Definitely (1) 5:13
direction (1) 7:7
District (2) 4:20 6:3
document (1) 2:22
doing (1) 5:5
domestic (1) 3:12

E
easement (5) 2:9 2:16,23 3:1 6:7
et (1) 3:9
extracted (1) 3:11

F
fact (1) 5:5
fantastic (1) 5:13
feel (2) 3:25 5:11
fine (1) 2:17
first (1) 2:6
five (1) 2:15
five-year (1) 2:16
foregoing (2) 7:5 7:7
forgot (1) 3:17
four (2) 2:4 4:14
full (2) 2:9 3:1

G
give (4) 2:23 3:21 5:15,16
going (1) 4:11
good (3) 2:19 3:24,25
great (2) 2:17 3:3
guys (2) 2:17 5:7

H
Habitats (1) 4:4
Hall (1) 1:4
hand (1) 7:10
heading (1) 4:16
historical (1) 4:21
House (1) 3:8

I
insert (1) 4:19

J
Jackson (1) 1:5
job (1) 5:8
JOHN (17) 2:1 2:15,20,22 3:5 3:14,16,23,25 4:3,9,11,24 5:3 5:7,11,15
junction (1) 4:5

K
know (1) 4:11

L
Laemmle (2) 6:1 6:1
Land (2) 4:14,16
LAZAR (16) 2:12,19,21 3:3 3:13,15,21,24 4:2,8,10,23 5:1 5:4,9,12
line (3) 2:2 3:19 3:19
lines (1) 2:6
Lone (1) 1:5
look (1) 3:4
looking (1) 4:15

M
making (1) 2:20
Mary (3) 3:22 7:3,15
mean (1) 2:12
MEETING (1) 1:1
mentioned (7) 3:7,7,10,11,18 3:18,19
Michael (1) 6:1

N
name (1) 6:1
need (1) 4:6
non-military (3) 4:13,16,25
number (4) 2:2,2 3:17 4:18

O
October (2) 1:3 7:11
okay (5) 3:16,18 4:8,10 5:3
Old (1) 3:8
On-Installatio... 4:13,16
outstanding (1) 5:4
overturned (1) 2:13

P
page (6) 2:2,6 3:17,18,19 4:15
paper (1) 2:5
perfect (1) 5:2
period (2) 2:9 3:1
perpetuity (2) 2:8,11
pieces (1) 2:5
Pine (1) 1:5
places (2) 3:5,6
point (1) 2:15
possible (1) 3:21
President (1) 6:2
proceedings (1) 7:8
provides (1) 3:9
PUBLIC (2) 1:1 1:2
put (4) 2:12 3:23 4:6 5:13

R
rainfall (1) 3:20
ranch (1) 4:5
read (2) 2:4 3:17
ready (1) 2:3
real (1) 3:25
really (2) 2:23 5:9
reason (1) 2:10
recommend (1) 2:25
recommendati... 3:3
recommendin... 2:9,25
record (1) 7:8

CHINALAKE PUBLICCOMMENTS/003

Document 2

referenced (1) 2:1
renewed (1) 2:7
replacing (1) 2:8
reported (1) 7:5
reporter (2) 5:16 7:4
**REPORTER'... ** 7:1
request (1) 6:3
rest (1) 3:13
right (8) 2:16,21 2:23 3:15,22 4:2,15,23
rights (2) 4:20 6:4
Riparian (1) 4:3
ROTHGEB (17) 2:1,15,20,22 3:5,14,16,23 3:25 4:3,9,11 4:24 5:3,7,11 5:15

S

screen (1) 2:3
seek (1) 2:25
seeking (1) 2:7
seeps (1) 3:7
Senior (1) 1:4
sense (2) 2:14 5:2
Services (2) 4:20 6:2
Shorthand (1) 7:3
shots (1) 2:3
show (2) 2:4 4:1
source (1) 4:21
spring (4) 2:8 3:8,8 4:5
springs (6) 3:6,7 3:10,10,12 4:5
State (1) 7:4
Statham (1) 1:4
**stenographica... ** 7:6
Street (1) 1:5
striking (1) 2:7
stuff (1) 5:1
subscribed (1) 7:10
sub-heading (2) 4:17,19
**sub-headings (... ** 4:14
suggest (1) 2:7
suggestion (1) 5:5
supply (2) 4:18 4:19
sure (1) 2:14

T

take (2) 2:13 3:4
taken (1) 7:9
telling (1) 4:17
testimony (1) 7:8
thing (1) 4:4
think (2) 5:1,7
thought (2) 3:2 4:24
three (1) 3:5
**THURSDAY (... ** 1:3
time (2) 6:6 7:9
transcribed (1) 7:6
**TRANSCRIP... ** 1:2
**transcription (... ** 7:7
true (1) 7:8
two (1) 3:6
type (1) 3:22

U

use (3) 3:12 4:18 4:25
Uses (2) 4:14,16

W

want (2) 2:22
wants (1) 5:16
water (5) 3:9,11 4:19,21 6:4
**Water-Relate... ** 4:4
we'll (1) 5:13
we're (1) 4:15
WHEREOF (1) 7:10
withdrawal (3) 6:4,5,6
WITNESS (1) 7:10
work (2) 5:5,11

Y

year (1) 3:1
years (4) 2:16 4:9,12 6:7
Young (2) 7:3,15

1

12799 (1) 7:15
138 (1) 1:5

2

2012 (2) 1:3 7:11
22 (1) 3:19
23 (1) 3:19
25 (4) 3:1 4:9,12 6:7
25-year (3) 2:9 6:4,5
29 (1) 2:6

3

3.1-13 (1) 4:15
3.1.7 (1) 4:16
3.1.7.X (1) 4:17
3.4-24 (1) 3:19
3.7-9 (1) 3:18
30 (1) 2:6

4

4 (1) 1:3
4.7-4 (1) 2:6

9

9th (1) 7:11

Document 3

AECOM PUBLIC MEETING

TRANSCRIPT OF PUBLIC COMMENT

THURSDAY, OCTOBER 4, 2012

131 North Highway 395, Fort Independence, CA

Document 3

ALAN BACOCK: Okay. My name is Alan Bacock, and I'm with -- I'm a Big Pine tribal member and also employed by the Big Pine Tribe as the Water Coordinator.

1 5.10 I have some comments on the LEIS on page -- actually, I should do page ES18. It says the tribes visit the Coso Hot Springs as a traditional property and since the geothermal production began, no changes are proposed. And some of the comments I had on that was that the tribes visited Coso Hot Springs long before the geothermal production began.

2 5.14 It also says conditions of the hot springs have been stable since 1993, but that statement -- that sentence doesn't really mean a lot to me because things have continued to change in the area, and that's why we've been talking with NASO about maps for looking at hazardous areas that are dangerous to go into. It also

3 5.26 shows historic properties are not being restored as a part of the proposed action, and since the structures are falling apart, really doing nothing to rehab the structures is a non-action and actually creates adverse effects and impacts.

4 14.3 And let's see, on page 2-4, lines 11 to 15, it talks about an alternative to transfer ownership of Naval lands to Native Americans, and that wouldn't be possible because of security, and we recognize that the

Document 3

4 Coso geothermal area is a safety and security buffer and overflight for weapons, but it really doesn't define how that safety is -- that buffer is depicted.

14.3 I know in a meeting we had earlier it was talked about a hazardous area that they were looking at the -- when missiles and rockets are going up in the air and how much room that they need, none of that is recorded within the actual LEIS document. It would be good to know why those buffers are there because I do know within the document it also says that 92 percent of

5 15.10 the base is a buffer, and so looking at this little area of Coso geothermal in, specifically the Coso Hot Springs and moving that over to the tribal control, it hasn't been defined as something that I would be able to understand why they can't open that up and why it's needed actually as a buffer.

6 10.34 Okay. On page 3.1-9 of the LEIS, it talks about the Coso -- it has a description of the various management units, and Coso geothermal is talked about as being a place where the geothermal power plants are located but then also overflight for weapons training and safety and security buffer. Obviously the geothermal power plants are not part of the mission of the Navy, so the only thing really connecting the mission is the overflight and the safety and security

CHINALAKE PUBLICCOMMENTS/004

6 buffer. And earlier I talked about being able to describe more fully what that actually means for the safety and security buffer, but the overflight, I do recognize that overflight doesn't just occur on the base 10.34 but it also occurs in non-military land including Ridgecrest, BLM and National Park Service county lands, and so why is overflight so critical within the Coso geothermal area?

All right. On page 4.5-6 at lines 28 to 32, 7 it says that Native American groups may have concerns regarding the potential effects of the geothermal development and, you know, that's really not a true statement. We've been meeting -- Native American groups have been meeting with the Navy ongoing for many years talking about our concerns, so it's not that we may have concerns, but we do have concerns with the effects of 5.9 geothermal development program and what that has done to the hot springs.

Later on in the page, lines 41 to 44, it says that it is clear in light of the continued visitation of the hot springs by tribes from the valley and members of the Kern River Native American community that the Coso Hot Springs have retained their value and integrity as a TCP. You know, we've continuously had meetings with the Navy talking about the integrity of the hot springs and

7 that they haven't retained their value. That is the whole reason we continue to have conversations with the Navy is that we see that what has happened at the 5.10 geothermal power plants and the reacting of that onto the hot springs is a very valid concern and one which we continue to have, so this really is not a true statement.

Page 4.1-4 speaks about Native American use in lines 33 to 39, and it basically says it's a beneficial use that Native Americans are able to access those lands, and I just want to concur that we also believe that it's a beneficial use and we're able to go on and use lands that our ancestors had.

8 On page 3.9-6 line 1, it shares about renewable energy initiatives that are underway at Niles, and one of those listed is the geothermal plant 9.1 operations. It should be understood that there is truly no renewable energy in that they're using water from one basin and moving it to another basin, and water is a finite resource, and so we need to be able to protect those resources. And so to be able to call the geothermal plant renewable energy is no longer the case, because of the Hay Ranch Project in moving water from one location to another, which is really due to the inefficient operations of the geothermal plants run by

8 Coso Hot Springs where the steam generation is just 9.1 really moving the water from being placed underground and then up through their operation and then up into the atmosphere.

On page 3.6-17, paragraphs -- or lines 37 to 9 41 -- or citations are an ITSI report done in 2011 the conclusions based were really conclusions that were off of the executive summary and not off of the technical report. The technical report actually had different conclusions, and those should also be included within these since you're looking at just a summary of what those reports said. One of the things that the technical report said was that the timing of the onset of geothermal withdrawal and changes in hot spring 5.9 activity at Coso suggest a correlation. If you're going to be talking about things other than the ITSI report, it's very important that you look at the technical report because, really, the summary -- that executive summary, when looked at in light of the technical report, the technical report shared information that is not included within the summary, and the conclusions given in the executive summary did not actually really capture what was shared throughout the technical report document.

I've got another one. This is a quick one.

10 Page 3.5-12, there's a map, and on that map, there's -- 5.9 they depict different areas including Coso Hot Springs and Coso Village but it neglects to put the Coso Rock National Historic Landmark on here.

On page 3.5-10, on lines 8, 15, it speaks 11 about the -- again, the ITSI report and it talks about the hydrologic modeling not able to confirm that there is a correlation between the geothermal production and the change at the springs. One thing that needs to be shared within that paragraph is that the hydrologic modeling was created without looking at a -- without 6.4 being able to expand out to a two kilometer radius, so the report was unable to confirm the correlation because it was really limited in its development, the model should have included a two kilometer radius since that was the whole point -- was to look at the correlation between geothermal plant operations and the Coso Hot Springs and the changes that have occurred.

12 All right. On page 7-1 lists a number of the tribal groups that are associated with this -- with the 15.11 base and it lists Big Pine Reservation, and I'd like it changed to Big Pine Paiute Tribe of the Owens Valley.

And that's all I've got.

CHINALAKE PUBLICCOMMENTS/005

REPORTER'S CERTIFICATE

I, Mary Anne Young, a Certified Shorthand Reporter for the State of California, do hereby certify:

That the foregoing comment was reported by me stenographically and were transcribed through computerized transcription under my direction; and the foregoing is a true and correct record of the testimony and proceedings taken at that time.

IN WITNESS WHEREOF, I have subscribed my hand this 9th day of October, 2012.

Mary Anne Young

MARY ANNE YOUNG, CSR NO. 12799

A
able (8) 3:14 4:1 5:10,12,20,21 7:7,12
access (1) 5:10
action (1) 2:18
activity (1) 6:15
actual (1) 3:8
adverse (1) 2:20
AECOM (1) 1:1
air (1) 3:6
Alan (2) 2:1,1
alternative (1) 2:23
American (4) 4:10,13,22 5:8
Americans (2) 2:24 5:10
ancestors (1) 5:13
Anne (2) 8:3,15
apart (1) 2:19
area (5) 2:14 3:1 3:5,11 4:8
areas (2) 2:16 7:2
associated (1) 7:20
atmosphere (1) 6:4

B
Bacock (2) 2:1,1
base (3) 3:11 4:4 7:21
based (1) 6:7
basically (1) 5:9
basin (2) 5:19,19
began (2) 2:7,10
believe (1) 5:11
beneficial (2) 5:9 5:12
Big (4) 2:2,3 7:21,22
BLM (1) 4:6
buffer (7) 3:1,3 3:11,16,22 4:1 4:3
buffers (1) 3:9

C
CA (1) 1:4
California (1) 8:4
call (1) 5:21
capture (1) 6:23
case (1) 5:22
CERTIFICA... 8:1
Certified (1) 8:3
certify (1) 8:4
change (2) 2:14 7:9
changed (1) 7:22
changes (3) 2:7 6:14 7:18
citations (1) 6:6
clear (1) 4:20
comment (2) 1:2 8:5
comments (2) 2:4,8
community (1) 4:22
computerized ... 8:6
concern (1) 5:5
concerns (4) 4:10,15,16,16
conclusions (4) 6:7,7,10,21
concur (1) 5:11
conditions (1) 2:11
confirm (2) 7:7 7:13
connecting (1) 3:24
continue (2) 5:2 5:6
continued (2) 2:14 4:20
continuously (1) 4:24
control (1) 3:13
conversations ... 5:2
Coordinator (1) 2:3
correct (1) 8:8
correlation (4) 6:15 7:8,13,16
Coso (15) 2:6,9 3:1,12,12,18 3:19 4:7,22 6:1 6:15 7:2,3,3,17
county (1) 4:6
created (1) 7:11
creates (1) 2:20
critical (1) 4:7
CSR (1) 8:15

D
dangerous (1) 2:16
day (1) 8:11
define (1) 3:2
defined (1) 3:14
depict (1) 7:2
depicted (1) 3:3
describe (1) 4:2
description (1) 3:18
development (3) 4:12,17 7:14
different (2) 6:9 7:2
direction (1) 8:7
document (3) 3:8,10 6:24
doing (1) 2:19
due (1) 5:24

E
earlier (2) 3:4 4:1
effects (3) 2:21 4:11,16
employed (1) 2:3
energy (3) 5:15 5:18,22
ES18 (1) 2:5
executive (3) 6:8 6:18,22
expand (1) 7:12

F
falling (1) 2:19
finite (1) 5:20
foregoing (2) 8:5 8:7
Fort (1) 1:4
fully (1) 4:2

G
generation (1) 6:1
geothermal (17) 2:7,10 3:1,12 3:19,20,23 4:8 4:11,17 5:4,16 5:22,25 6:14 7:8,17
given (1) 6:22
go (2) 2:16 5:12
going (2) 3:6 6:15
good (1) 3:9
groups (3) 4:10 4:13 7:20

H
hand (1) 8:10
happened (1) 5:3
Hay (1) 5:23
hazardous (2) 2:16 3:5
Highway (1) 1:4
historic (2) 2:17 7:4
hot (13) 2:6,9,11 3:12 4:18,21 4:23,25 5:5 6:1 6:14 7:2,17
hydrologic (2) 7:7,10

I
impacts (1) 2:21
important (1) 6:17
included (3) 6:10,21 7:15
including (2) 4:5 7:2
Independence ... 1:4
inefficient (1) 5:25
information (1) 6:20
initiatives (1) 5:15
integrity (2) 4:23,25
ITSI (3) 6:6,16 7:6

K
Kern (1) 4:22
kilometer (2) 7:12,15
know (5) 3:4,9 3:10 4:12,24

L
land (1) 4:5
Landmark (1) 7:4
lands (4) 2:24 4:6 5:11,13
LEIS (3) 2:4 3:8 3:17
let's (1) 2:22
light (2) 4:20 6:19
limited (1) 7:14
line (1) 5:14
lines (6) 2:22 4:9 4:19 5:9 6:5 7:5
listed (1) 5:16
lists (2) 7:19,21
little (1) 3:11

located (1) 3:21
location (1) 5:24
lung (1) 2:9
longer (1) 5:22
look (2) 6:17 7:16
looked (1) 6:19
looking (5) 2:15 3:5,11 6:11 7:11
lot (1) 2:13

M
management (1) 3:19
map (2) 7:1,1
maps (1) 2:15
Mary (2) 8:3,15
mean (1) 2:13
means (1) 4:2
meeting (4) 1:1 3:4 4:13,14
meetings (1) 4:24
member (1) 2:2
members (1) 4:21
missiles (1) 3:6
mission (2) 3:23 3:25
model (1) 7:14
modeling (2) 7:7 7:11
moving (4) 3:13 5:19,23 6:2

N
name (1) 2:1
NASO (1) 2:15
National (2) 4:6 7:4
Native (6) 2:24 4:10,13,22 5:8 5:10
Naval (1) 2:24
Navy (4) 3:24 4:14,25 5:3
need (2) 3:7 5:20
needed (1) 3:16
needs (1) 7:9
neglects (1) 7:3
Niles (1) 5:15
non-action (1) 2:20
non-military (1) 4:5
North (1) 1:4
number (1) 7:19

O
Obviously (1) 3:22
occur (1) 4:4
occurred (1) 7:18
occurs (1) 4:5
October (2) 1:3 8:11
Okay (2) 2:1 3:17
ongoing (1) 4:14
onset (1) 6:13
open (1) 3:15
operation (1) 6:3
operations (3) 5:17,25 7:17
overflight (6) 3:2,21,25 4:3,4 4:7
Owens (1) 7:22
ownership (1) 2:23

P
page (12) 2:4,5 2:22 3:17 4:9 4:19 5:8,14 6:5 7:1,5,19
Palute (1) 7:22
paragraph (1) 7:10
paragraphs (1) 6:5
Park (1) 4:6
part (2) 2:18 3:23
percent (1) 3:10
Pine (4) 2:2,3 7:21,22
place (1) 3:20
placed (1) 6:2
plant (3) 5:16,22 7:17
plants (4) 3:20 3:23 5:4,25
point (1) 7:16
possible (1) 2:25
potential (1) 4:11
power (3) 3:20 3:23 5:4
proceedings (1) 8:8
production (3) 2:7,10 7:8
program (1) 4:17
Project (1) 5:23
properties (1) 2:17
property (1) 2:6
proposed (2) 2:8 2:18
protect (1) 5:20
PUBLIC (2) 1:1 1:2
put (1) 7:3

Q
quick (1) 6:25

R
radius (2) 7:12 7:15
Ranch (1) 5:23
reacting (1) 5:4
really (12) 2:13 2:19 3:2,24 4:12 5:6,24 6:2 6:7,18,22 7:14
reason (1) 5:2
recognize (2) 2:25 4:4
record (1) 8:8
recorded (1) 3:8
regarding (1) 4:11
rehab (1) 2:19
renewable (3) 5:15,18,22
report (11) 6:6,9 6:9,13,16,18 6:20,20,23 7:6 7:13
reported (1) 8:5
Reporter (1) 8:4
REPORTER'... 8:1
reports (1) 6:12
Reservation (1) 7:21
resource (1) 5:20
resources (1) 5:21
restored (1) 2:17
retained (2) 4:25 5:1
Ridgecrest (1) 4:6
right (2) 4:9 7:19
River (1) 4:22
Rock (1) 7:3
rockets (1) 3:6
room (1) 3:7
run (1) 5:25

S
safety (5) 3:1,3 3:22,25 4:3
says (6) 2:5,11 3:10 4:10,19 5:9
security (5) 2:25 3:1,22,25 4:3
see (2) 2:22 5:3
sentence (1) 2:13
Service (1) 4:6
shared (3) 6:20 6:23 7:10
shares (1) 5:14
Shorthand (1) 8:3
shows (1) 2:17
speaks (2) 5:8 7:5
specifically (1) 3:12
spring (1) 6:14
springs (13) 2:6 2:9,11 3:12 4:18,21,23,25 5:5 6:1 7:2,9 7:18
stable (1) 2:12
State (1) 8:4
statement (3) 2:12 4:13 5:7
steam (1) 6:1
stenographica... 8:6
structures (2) 2:18,20
subscribed (1) 8:10
suggest (1) 6:15
summary (6) 6:8 6:11,18,19,21 6:22

T
taken (1) 8:9
talked (3) 3:5,19 4:1
talking (4) 2:15 4:15,25 6:16
talks (3) 2:23 3:17 7:6
TCP (1) 4:24
technical (7) 6:8 6:9,13,17,19 6:20,23
testimony (1) 8:8
thing (2) 3:24 7:9
things (3) 2:13 6:12,16
THURSDAY (... 1:3
time (1) 8:9
timing (1) 6:13
traditional (1) 2:6
training (1) 3:21
transcribed (1) 8:6
TRANSCRIP... 1:2
transcription (... 8:7
transfer (1) 2:23
tribal (3) 2:2 5:13 7:20
Tribe (2) 2:3 7:22
tribes (3) 2:5,9 4:21
true (3) 4:12 5:6 8:8
truly (1) 5:17
two (2) 7:12,15

U
unable (1) 7:13
underground (... 6:2
understand (1) 3:15
understood (1) 5:17
underway (1) 5:15
units (1) 3:19
use (4) 5:8,10,12 5:15

V
valid (1) 5:5
valley (2) 4:21 7:22
value (2) 4:23 5:1
various (1) 3:18
Village (1) 7:3
visit (1) 2:6
visitation (1) 4:20
visited (1) 2:9

W
want (1) 5:11
water (5) 2:3 5:18,19,23 6:2
weapons (2) 3:2 3:21
we're (1) 5:12
we've (3) 2:15 4:13,24
WHEREOF (1) 8:10
withdrawal (1) 6:14
WITNESS (1) 8:10
wouldn't (1) 2:24

Y
years (1) 4:14
Young (2) 8:3,15

1
1 (1) 5:14
11 (1) 2:22
12799 (1) 8:15
131 (1) 1:4
15 (2) 2:22 7:5
1993 (1) 2:12

2
2-4 (1) 2:22
2011 (1) 6:6
2012 (2) 1:3 8:11
28 (1) 4:9

3
3.1-9 (1) 3:17
3.5-10 (1) 7:5
3.5-12 (1) 7:1
3.6-17 (1) 6:5
3.9-6 (1) 5:14
32 (1) 4:9
33 (1) 5:9
37 (1) 6:5
39 (1) 5:9
395 (1) 1:4

4
4 (1) 1:3
4.1-4 (1) 5:8
4.5-6 (1) 4:9
41 (2) 4:19 6:6
44 (1) 4:19

7
7-1 (1) 7:19

8
8 (1) 7:5

9
9th (1) 8:11
92 (1) 3:10

CHINALAKE PUBLICCOMMENTS/006

Document 4

Posted by: Mary Austin (marvelous0201@gmail.com) **on** Oct 28, 2012 / 4:37PM

"28 October 2012

FROM: Mary J Austin
[redacted]

TO: Mr. Beale
NAWS China Lake Land Withdrawal Project Manager
Naval Facilities Command SW Desert IPT
1223 Pacific Highway
San Diego, Ca 92132-5198

SUBJ: China Lake LEIS Comments

This letter serves as comments to the recently released Draft Legislative Environmental Impact Statement (LEIS) for the renewal of the Naval Air Weapons Station China Lake Public Land Withdrawal. The EIS is the Navy's request to Congress for an additional 25 years.

COMMENT (1)

1 During the Navy scoping process, I submitted comments over a year ago requesting necessary documents required to review the draft LEIS. As yet those documents used in support of the LEIS analysis have not been provided for public inspection and are not part of the current document. My
13.1 comment read "Respectfully request copies of the Integrated Cultural Resources Management Plan (ICRMP), Integrated Natural Resources Management Plan (INRMP) and Comprehensive land Use Management Plan (CLUMP) for review to assist with review of the impending Draft EIS…" Per my request at scoping time, the Navy has failed to provide me
2 with the INRMP, ICRMP or CLUMP. The CLUMP in the appendix of the LEIS is totally un-reviewable since you can't tell what was revised from the original CLUMP making it impossible to provide comments. The Navy
13.7 needs to provide the public with another opportunity to comment once these documents are ready and changes to the CLUMP have been identified.

Document 4

COMMENT (2)

3 With regard to the INRMP, I used to manage the NAVIR Weapons Division Environmental Compliance budgets before retiring in 2010. Between 2006 and 2008 I funded a revision of the 2000 INRMP (as required every five years by the Sikes Act) for approximately $55,000. In November of 2008 I provided a completed draft INRMP ready for
13.2 finalization with the wildlife agencies to the China Lake Station Environmental Management Division for the finalization process. Why is the LEIS referring to a 2000 INRMP rather than the one that was pretty much complete in 2008? What happened to that 2008 INRMP since I retired? Was the $55,000 just a waste of taxpayer money? The Navy remains out of compliance with the Sikes Act by using the old 2000 INRMP as its reference and this INRMP is severely out of date.

COMMENT (3)

4 Since the Navy's EIS is out of compliance with NEPA requirements for analysis and proper public disclosure and commenting, how can the Navy legally continue with increasing its operations after the land withdrawal is continued in 2014?

13.5 This LEIS release is premature and the CLUMP is poorly written. Many supporting documents and processes are missing as well as maps. In my opinion this is an embarrassment to the Navy and its staff responsible for its release. Suggest the Navy pull back this public submittal and hold the hearing at a later date when the Navy's documents are ready for public inspection and review, and only then can the Navy meet its obligations under NEPA. Otherwise it would appear the Navy is purposely and knowingly circumventing its commitment to meet the requirements of NEPA and willing to undermine its trust with the Public. It is imperative that the Navy abide by its commitment to NEPA and uphold standards it claims to have regarding the public trust. Otherwise critical and necessary military testing and training capabilities may be compromised by legal challenges and a lack of public support to the mission of the Navy and the Department of Defense.

5 The Navy should ensure that the China Lake mission activities can continue unimpeded by overly restrictive arbitrary and capricious regulations or by making overreaching commitments to the public that it
13.6 can't possibly uphold. It is advantageous that the Navy spend its limited budget in a manner that will conserve and manage resources of legitimate significance in the best interest of the public and the taxpayer. Without proper NEPA compliance, withdrawal of these lands is useless if the mission cannot be supported by appropriate NEPA documentation.

Mary J Austin
Copy to:
CNO
CO NAWS
Representative Kevin McCarthy
Kern Co Supervisor Jon McQuiston
Senator Barbara Boxer
Senator Diane Feinstein

Document 4A

Posted by: Mary J Austin (marvelous0201@gmail.com) **on** Feb 11, 2013 / 10:43AM

"11 February 2013

From: Mary J Austin
[redacted]

To: Mr. Gene Beale
Naws China Lake Land Withdrawal Project Manager
Naval Facilities Command SW Desert IPT
1223 Pacific Highway
San Diego, CA 92132-5198

Subj: CHINA LAKE RE-OPENING OF DRAFT ENVIRONMENTAL IMPACT STATEMENT

I appreciate the opportunity to once again comment on the subject document as well as the additional supporting material provided however, with the increased information I find it hard to complete an adequate review in the 30 day time period allotted.

Concerning my original comments on the Integrated Natural Resources Management Plan (INRMP) from the first review, COMMENT (2) reads:

"With regard to the INRMP, I used to manage the NAVIR Weapons Division Environmental Compliance budgets before retiring in 2010. Between 2006 and 2008 I funded a revision of the 2000 INRMP (as required every five years by the Sikes Act) for approximately $55,000. In November of 2008 I provided a completed draft INRMP ready for finalization with the wildlife agencies to the China Lake Station
1 Environmental Management Division for the finalization process. Why is the LEIS referring to a 2000 INRMP rather than the final draft that was completed in 2008 by NAVIAR? What happened to that 2008 INRMP since I retired? Was the $55,000 just a waste of taxpayer money? The Navy remains out of compliance with the Sikes Act by using the old 2000 INRMP as its reference and this INRMP is severely out of date."

In the CD provided with this new comment period once again the 2000 version of the INRMP is provided. Why? This document is clearly in violation of the Sikes Act which requires the INRMP be revised every five
13.58 (5) years. The final draft INRMP that NAVAIR provided to NAWS Environmental Management Division (EMD) in November 2008 was fully vetted through EMD, included their comments and revisions and EMD approved of the issuance of the final draft. I question what happened since NAWS EMD then contracted with NAVFAC in 2008 to develop a new INRMP which is not included in this review. That's five years ago. NAVAIR provided $55K as a courtesy to NAWS EMD for the development of the INRMP to bring China Lake into compliance with the Sikes Act and then EMD puts out another contract to develop another INRMP at tax payer expense and yet still the DEIS has a 2000 INRMP in the document. This is a serious case of fraud waste and abuse not to mention the compliance issue.

Document 4A

As I stated above there is not enough time to perform a complete review of
2/13.54 these additional documents. Issues I picked out from a scan are where is revised CLUMP. The Land Use Zone Map is actually Military Land Use
3/13.55 Map. Where are the Agency reviews and comments, and where are the Agency Programmatic Agreements. The NAVIAR operational section
4/15.28 seems somewhat abbreviated and yet military testing is the reason for the land withdrawal. I have not had time to review the ICRMP.

It seems to me that the Navy has rushed this process which makes me question not only this process but the validity other Navy documents.

Very respectfully,
Mary J Austin

Copy to:
D. A. Lazar Commanding Officer
"

CHINALAKE PUBLICCOMMENTS/007

BIG PINE PAIUTE TRIBE OF THE OWENS VALLEY
Big Pine Paiute Indian Reservation
P.O. Box 700 · 825 South Main Street · Big Pine, CA 93513
(760) 938-2003 · fax (760) 938-2942
www.bigpinepaiute.org

November 8, 2012

Gene Beale, Project Manager
NAWSCL Land Withdrawal Renewal EIS/LEIS
1220 Pacific Highway
San Diego, CA 92132-5190

RE: Comments on the Draft Environmental Impact Statement/Legislative Environmental Impact Statement for Renewal of Naval Air Weapons Station China Lake Public Land Withdrawal, California

The Big Pine Paiute Tribe of the Owens Valley (Tribe) is a federally recognized tribe with a strong connection to the lands being managed by Naval Air Weapons Station China Lake (NAWS). The Tribe would like to thank you for this opportunity to submit comments on the Draft Environmental Impact Statement/Legislative Environmental Impact Statement for Renewal of Naval Air Weapons Station China Lake Public Land Withdrawal, California (DEIS/LEIS).

Historical and Current Visitation of Coso Hot Springs by Tribes

1 5.10 On page ES-18 of the DEIS/LEIS it states that "Tribes visit the Coso Hot Springs as a Traditional Cultural Property (TCP) since geothermal production began in the Coso Geothermal LMU." However, tribes have visited Coso Hot Springs as a sacred place long before there was even a United States of America. It is disrespectful and completely inaccurate to say that tribes have only visited the Coso Hot Springs since geothermal production began. Many records are available to substantiate the use of Coso Hot Springs by tribes including a 1977 report commissioned by California's Office of Historic Preservation entitled "Ethnographic Report on Coso Hot Springs" by Dorothea Theodoratus.

2 5.9 On page 4.5-6 the DEIS/LEIS states that "It is clear in light of the continued visitation to the hot springs by tribes from the Owens Valley and members of Kern River Native American Community that the Coso Hot Springs have retained their value and integrity as a TCP since geothermal production began in the Coso Geothermal LMU, and continue to do so." This section is misleading, and fails to mention the adverse effects of geothermal production on the traditional use of Coso Hot Springs. Many tribal Elders and their families discontinued going to Coso Hot Springs because of these adverse effects. Tribes have repeatedly shared with the leadership at NAWS that Coso Hot Springs is no longer able to be used in the traditional

manner. Please see Attachment 1 for understanding the perspective of tribal elders as they visited a damaged and disturbed sacred site in 2001 and Attachment 2 which declares that the Tribe has determined that adverse effects have taken place at Coso Hot Springs.

3 5.11 The Tribe desires that the final EIS/LEIS have accurate information regarding the historical use of Coso Hot Springs by Native Americans and accurate tribal perspective on the current condition of Coso Hot Springs.

Absence of a Management Plan for Coso Hot Springs

4 5.12 On page 4.5-6 of the DEIS/LEIS it states that the June 1979 MOA with the tribes called for "the development of Cultural Resource Management Plan" and that the MOA "between the California SHPO and Commander of NAWSCL for the Navy Geothermal Development Program in the vicinity of Coso Hot Springs (U.S. Navy 1979b)" is the management plan. It needs to be noted that the MOA referred to as "U.S. Navy 1979b" was also signed by the Advisory Council on Historic Preservation (ACHP). U.S. Navy 1979b does not reference the June 1979 MOA as the basis for its existence and is not the management plan described in the June 1979 MOA. A management plan for Coso Hot Springs was proposed, but never completed. In Attachment 3, paragraph 4, the Captain of NAWS in 2001 shared that a management plan would be developed by NAWS and tribes. No management plan has been developed to date for the Coso Hot Springs. The language in the final EIS/LEIS must be changed to reflect the absence of a management plan for Coso Hot Springs.

5 5.13

Condition of Coso Hot Springs

6 5.14 The DEIS/LEIS says on page ES-18 that "No changes are proposed to geothermal plant operations and the conditions of the Hot Springs have been stable since 1993. The Proposed Action would have no adverse effects on historic properties, and there would be no significant impacts to cultural resources." The Tribe does not agree with the statement that the Hot Springs have been stable since 1993, nor does the Tribe agree that this action will not have impacts to historic properties and cultural impacts. The Hot Springs have not been stable since the development of geothermal energy within the Coso Geothermal Area. Monitoring reports show that water temperature and water levels are constantly in flux. In Attachment 4 there is a graph showing temperature change and elevation change at Coso Hot Springs. The graph was taken from "Coso Hot Springs Monitoring Report 2009-2010" which was produced by the Geothermal Program Office of NAWS.

7 5.15 The executive summary statement is in conflict with page 4.5-6 which states that "Coso Hot Springs monitoring reports are distributed annually to the SHPO, ACHP, and Native American groups who may have concerns regarding the potential effects of the Geothermal Development Program on the Hot Springs. Those ***concerns include appreciable change in water temperature and elevation*** at the South Pool since the onset of monitoring Coso Hot Springs surface activity, which could affect tribal use of the springs for healing purposes (Curry 2004)" (emphasis added). The "change" has been the increased water temperature of Coso Hot Springs ever since geothermal production, and this change has affected tribal use of the Springs for the last 24 years.

8 9.1 The Geothermal Plant operations are considered renewable energy on page 3.9-6 of the DEIS/LEIS, but the geothermal plant operations can not be considered a source of renewable energy. Coso Operating Company's geothermal operations cannot be considered renewable energy for two reasons. First, large quantities of water are constantly being lost to the atmosphere because the operator does not recapture and reinject the steam. Second, the operator now pumps water from the Rose Valley basin and transports it into the basin where the geothermal facility is located. This imported water is supposed to offset diminished energy production, but to date, it has failed to be anything but a terrible waste of water. In the 2009 EIR for the project, 4,839 ac-ft/yr of water would be pumped from groundwater in the Rose Valley and injected within the Coso Geothermal Plant operations for 30 years. To date, the project has been unable to deliver 4,839 ac-ft/yr to the Coso Geothermal Plant operations because of the environmental impacts associated with the groundwater pumping.

Power production and withdrawal of fluids from the Coso geothermal field began in 1987, and according to an April 2007 technical report entitled "Coso Hot Springs Analysis" prepared by Innovative Technical Solutions Inc. (2007 Study), shortly after the onset of production, conditions within the Coso Hot Springs changed. In 1988, temperatures and water levels began to noticeably increase. Temperatures continued to rise, and in 1993 reached the boiling point of water (212 F). Although tribal members still frequent the springs, they were no longer conducive for bathing and the mud was too hot to handle.

The Big Pine Paiute Tribe has testified to the Navy, that it is physically impossible for Native Americans to use the Coso Hot Springs in a traditional manner because of the changes which have occurred since the implementation of the geothermal program. In response to the Tribe's testimony, the Navy has stated that *"NAWS China Lake acknowledges that appreciable changes in the water temperature and elevation have occurred in the South Pool since the Navy first began recording data from the Coso Hot Springs area in the 1970's"* (Correspondence to the

9 5.16 Tribe dated March 12, 2009). Due to the testimony of the Tribe and acknowledgement by the Navy that changes have taken place at Coso Hot Springs, the Tribe contends that there have been adverse impacts at Coso Hot Springs and that the two Memoranda of Agreement (MOA) signed by the Navy in 1979 regarding the protection and use of Coso Hot Springs have been violated.

Both 1979 MOAs provide for the preservation of the hot springs. In the Ad Hoc Coso Committee MOA, paragraph 11 provides:

"That material or substantial alterations or permanent disturbances of the hot springs or the pond shall not be permitted. Both the Naval Weapons Center and the Native Americans pledge their mutual cooperative efforts to expeditiously develop a preservation and management plan acceptable to both parties and to the California State Office of Historic Preservation and approvable by the Advisory Council on Historic Preservation."

10 5.17 The preservation and management plan promised in the MOA was never developed.

The 1979 Programmatic MOA was also intended to address preservation and protection of the hot springs. The Programmatic MOA was designed specifically to address possible adverse impacts to Coso Hot Springs as a result of the geothermal plant. It outlines NAWS's responsibilities for extensive data collection and monitoring to determine if there are adverse impacts to the springs. Under the Programmatic MOA, NAWS was to provide the "Owens Valley Paiute Shoshone Band of Indians" with all the data collected and consult with the Tribes at every stage of the geothermal plant development.

Of significance is Section 6.e. of the Programmatic MOA which states:

"In the event a perceptible change in the surface activity of the hot springs were to occur over a period of time as a result of the geothermal development program the Navy will cease those actions on the part of the Navy and/or its agents which can reasonably be presumed to be causing this effect and will make every reasonable effort to determine what actions could be taken to mitigate this change. The Navy will request the comments of the Owens Valley Paiute-Shoshone Band of Indians, the California State Historic Preservation Officer and the Advisory Council on Historic Preservation. The Owens Valley Paiute-Shoshone Band of Indians will be afforded 30 working days to comment ..... [If the parties cannot agree] the Navy will request consultation with the Advisory Council in accordance with Title 36 ...prior to undertaking any actions which could reasonably be presumed to result in a further detrimental change in the Springs' activities."

NAWS has consistently contended that "perceptible changes" to the hot springs are not the result of the geothermal development program and over the years commissioned several studies supporting this conclusion. This position was again reiterated by NAWS in its cover letter with the 2007 Study which states: "Navy's position is that current scientific data cannot prove or disprove a correlation between geothermal operations and any perceptible changes that have occurred in the surface manifestations at the Coso Hot Springs." However, Navy does acknowledge in its letter that there has been appreciable change in the water temperature and elevation in the South Pool since the Navy first began recording data from the Coso Hot Springs area in the 1970s.

Interestingly, the 2007 Study does find that indeed there is a connection between the geothermal production and the condition of the hot springs. The technical portion of the Study concludes with "the timing of the onset of the geothermal fluid withdrawal and changes at the hot springs activity at Coso suggests a correlation." The 2007 Study acknowledges there has been "profound changes to the Coso geothermal system in response to production." Also, "there is some indication from the mathematical models that production also influenced the hot spring activities." And the changes to the springs "seem to correlate well with the onset of the geothermal production."

NAWS claimed that the 2007 Study was inconclusive on whether the geothermal development has resulted in the adverse impacts to the hot springs, but has acknowledged that changes to

CHINALAKE PUBLICCOMMENTS/008

the surface activity at Coso Hot Springs have occurred. Despite that acknowledgement, NAWS has not taken any action to mitigate the change. It should be stated that continuing to conduct a monitoring program to observe changes is not mitigation. Mitigation as defined by Webster is "to lessen or to try to lessen the seriousness or extent of or to make less severe or harsh." In the environmental context, mitigation would be a project and/or program designed to lessen or
11 compensate for impacts to a natural resource. Therefore, the Tribe contends that actions to
5.25 mitigate the situation at Coso Hot Springs have not occurred and that the Navy is obligated to cease development of the geothermal resource until a mitigation strategy can be agreed upon.

12 On page 4.5-7 of the DEIS/LEIS it states that "Because there are no proposed changes to geothermal operations, because the conditions of Coso Hot Springs have been stable since
5.15 1993, and because Coso Hot Springs retains its value and integrity as a TCP, the Proposed Action would have no adverse effects on historic properties, and there would be no significant impacts to cultural resources. However, should changes to the surface activity of the Hot Springs occur as a result of geothermal development, mitigation measures would be developed in accordance with the MOA (U.S. Navy 1979b)."

This paragraph should be deleted because it is inaccurate information. The "stable" conditions of pool temperatures at 160 to 180 degrees are meaningless in regards to traditional use because immersion in the Springs are impossible due to the adverse effects of geothermal production. The adverse impacts to Coso Hot Springs preceded the Proposed Action, and should be addressed in the Comprehensive Land Use Management Plan (CLUMP) with revised tribal land management proposals with an accompanying MOA which addresses safety and access issues. "...changes to the surface activity of the Hot Springs" has occurred as a result of geothermal development, and mitigation measures have not yet been implemented. The conditions of the Hot Springs are not stable and that is why tribes and NAWS are creating a mechanism to continually update maps for the changing landscape at Coso Hot Springs for the safety of visitors.

13 The Tribe has determined that Coso Hot Springs has been adversely affected by the geothermal
5.25 development occurring on withdrawn lands and would like to see the final EIS/LEIS address ways to mitigate the situation.

Potential Mitigation for Adverse Effects at Coso Hot Springs
In order to mitigate the adverse effects of geothermal development on Coso Hot Springs the tribes have proposed to NAWS that a transfer of ownership take place so that tribes can provide opportunity for healing at the Coso Hot Springs and Prayer Site. The DEIS/LEIS states on page 2-4 that "the Navy has determined that mission requirements for effective land use controls to ensure safety and security requirements preclude this from being a viable proposal. Such an action would not meet the Navy's purpose and need as it would allow for unregulated entry onto an active military test range and place land use decision authority for lands within the test range with a non-Navy entity...It should also be noted that a potential transfer of the Coso Hot Springs and Prayer Site is very speculative. The Navy does not view the property in question as being excess to its current or anticipated needs, nor would the Navy have authority

to effect such a transfer itself even if it did consider the property excess. Therefore, this alternative was eliminated from further consideration."

Over the past several months, tribes in discussion with NAWS, have brought up the need for a land transfer or cultural easement in order to provide a long-term management structure for Coso Hot Springs which would be proactive in protecting the Coso Hot Springs and guaranteeing maximum, safe access beyond the changing conditions which may occur with a change of command at NAWS.

A land transfer or cultural easement option can be tied to a revised access MOA which is currently being negotiated with the involved tribes and NAWS. The Maturango Museum conducts "6 tours of up to 50 individuals each per month, with additional tours of smaller groups allowed" (p. 3.1-15). "Daily access to the Coso geothermal development area is coordinated with the NAWSCL Range Department and the area is evacuated whenever NAWSCL mission commitments indicate safety conflicts with weapons testing or other military uses of their Range land" (p. 3-1.14). These examples of widespread access to specific areas on the base can be used as examples for expanded access to Coso Hot Springs.

At a tribal consultation meeting on the NAWS Land Withdrawal Renewal EIS/LEIS on October 4, 2012 at the Fort Independence Reservation, the land transfer or cultural easement proposal was brought up for discussion by tribal representatives. Captain Lazar and Melanie Ravan, Senior Counsel to Navy Region Southwest, San Diego, said that increased access options and easement and land trust proposals would be investigated. These investigations need to be incorporated into the final EIS/LEIS.

14 The Tribe believes that there are three options available for the transfer of lands to the tribes for mitigation of adverse impacts at Coso Hot Springs: 1) conveyance in fee ownership to the
14.4 Tribe or a consortium of Tribes organized in a nonprofit land trust; 2) transfer of administrative responsibility over the land from the Navy to the Bureau of Indian Affairs to hold it in trust for the Tribes; and 3) conveyance of a conservation easement to the Tribes or a tribal land trust. The Navy arguably has legal authority to implement any of these options.

1. Conveyance in Fee Ownership to the Tribes or Tribal Land Trust.

   a. Conveyance of Surplus Land in Fee Without Restriction.

The Secretary of the Navy may convey land that has become "excess to the needs of the Navy" to any third party, including Indian Tribes. The Federal Property Act authorizes the Navy to dispose of so-called surplus real property to the Administrator of the General Services Administration, which may then convey such property to the general public. *See* 40 U.S.C. § 471 et seq.; 32 C.F.R. § 736.1.

To take advantage of this authority, the land on which Coso Hot Springs is located would have to be declared surplus in the Navy's land management plan and then offered for conveyance to

other federal agencies and educational institutions. The Navy with this update to the CLUMP should identify Coso Hot Springs and the Prayer Site as surplus land to change the status of this land to make it eligible for a fee ownership conveyance.

   b. Conveyance of Surplus Land in Fee Restricted to Natural Resource Conservation.

The Secretary of the Navy also has statutory authority to convey to eligible entities land that is considered "surplus" and that is considered "suitable and desirable for conservation purposes." 10 U.S.C. § 2694a(a)(2). The law requires that the deed of conveyance must stipulate that the property is to be "used and maintained for the conservation of natural resources in perpetuity". § 2694a(c). If at any time the property is not being used for conservation purposes, the property will automatically revert to the United States. Entities eligible to receive a conveyance of land under this section include a "State or political subdivision of a State" and "a nonprofit organization that exists for the primary purpose of conservation of natural resources on real property." § 2694a(b)(1) and (2).

2. Transfer of Administrative Authority from the Navy to the Bureau of Indian Affairs to Hold in Trust for Indian Tribes.

The Navy has authority to transfer surplus land to other federal agencies for their use. 32 C.F.R. § 736.1(a). Under this authority, the title to the land remains with the United States, but the jurisdiction and administrative authority over the property is transferred to another federal agency.

There are two examples where an agency of the Department of Defense has transferred land to the Bureau of Indian Affairs to be held for the benefit of a federally-recognized Indian Tribe. In 2000, approximately 4,526 acres were transferred by the Secretary of the Army to the Secretary of the Interior "for management by the Bureau of Indian Affairs." 65 Federal Register 38299, June 20, 2000. The transfer is to remain in effect for 20 years, with the option of extending the term upon review by the Secretary of the Interior. The purpose of the transfer was to "protect an area having cultural, historical, religious, geological and archaeological significance to the Navajo Nation and the Pueblo of Zuni." *Id.* The land was to be managed "for these values, as well as, other compatible uses" in accordance with a Memorandum of Understanding between the Department of the Interior and the Ballistic Missile Defense Organization. *Id.* The Army retained the right to enter the property for the purposes of "activities related to the Fort Wingate Depot Activity Installation Restoration Program." *Id.* In the second example, in 2001, 903 acres in New Mexico were transferred from the military jurisdiction to BIA jurisdiction for a 20-year term. 66 Federal Register 44643, August 24, 2001.

3. Conveyance of a Conservation Easement.

Under this arrangement, the Navy would retain fee title to the land but grant an easement to an Indian Tribe or tribal land trust. The easement would provide that Coso Hot Springs would be preserved in perpetuity and that the members of an identified group would be allowed

access for clearly defined cultural and religious purposes. A conservation easement is an interest in land and must be recorded in the county clerk's office. They remain in effect forever, unless otherwise provided in the easement agreement or subsequently amended by the parties. Conservation easements are typically made by agreement of the parties in a document entitled "Grant Deed of Conservation Easement."

Navy Objections to Transfer of Land Ownership to Tribes
On page 1-17 the DEIS/LEIS it states that "Navy review concluded that the potential loss of the lands being requested presented a significant safety and security risk to the China Lake mission. The Commanding Officer further explained that the EIS/LEIS will identify the Tribes land ownership transfer proposal as an alternative given careful consideration but not carried forward for further review because it did not meet the Navy's identified purpose and need for the undertaking."

15 The final EIS/LEIS needs explain in detail why a transfer of the relatively small footprint of Coso Hot Springs is a security risk, especially in light of the very large footprint of geothermal
15.10 production which seems not to be a problem as a security risk for NAWS. It also needs to be explained in detail why the land ownership transfer proposal "did not meet the Navy's identified purpose and need for the undertaking." The land transfer or cultural easement proposal with an accompanying MOA with the tribes and the Navy would be part of the updated CLUMP, and needs to be included in all Alternatives. The proposal is not a stand-alone Alternative.

Page 3.1-9 of the DEIS/LEIS shares that the Coso Geothermal is a safety/security buffer and over flight for weapons testing; however, on page 3.10.4 and additional pages, there are additional areas listed that are off the military base which have over flight plans. Therefore, it is essential to note that over flight occurs within the Coso Geothermal area, as well as, within civilian airspace. It is not discussed in detail how the Coso Geothermal area is a safety/security buffer
16 except that nonadjacent areas are used for active military training activities. Since the areas for
10.34 active military training activities are not being conducted in adjacent areas of the Coso Geothermal area, then it is unknown the need for it to be used as a safety/security buffer

Need for Additional Alternative
17 For the purposes of the EIS/LEIS, a 25% ramp down in activities is a reasonable alternative
14.6 which needs to be analyzed. On page 2-3 of the DEIS/LEIS the "Decrease Military RDAT&E and Training Alternative" was rejected for further analysis. In the Frequently Asked Questions on the Council for Environmental Quality NEPA website it states that "Section 1502.14 requires the EIS to examine all reasonable alternatives to the proposal. In determining the scope of alternatives to be considered, the emphasis is on what is "reasonable" rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant." The Tribe recognizes that the Navy increased the tempo by 25%

CHINALAKE PUBLICCOMMENTS/009

in the last CLUMP and desires that a decrease in tempo by 25% be included in the list of alternatives within the final EIS/LEIS.

Typographical Corrections
In addition to the comments above, the Tribe has the following typographical corrections to submit regarding the LEIS:

18 / 1.11 | p. ES-11: Geothermal production is listed as a nonmilitary use on p. ES-5, but not on p. ES-11. There should be consistency within the document.

19 / 5.18 | p. 3.5-12: Coso Rock Art National Historic Landmark not depicted on map. The map needs to be revised to include this important area within the base boundaries.

20 / 15.11 | p. 7-1: Change "Big Pine Reservation" to "Big Pine Paiute Tribe of the Owens Valley."

The Tribe hopes these comments and corrections will be included in the final EIS/LEIS and the CLUMP will be revised accordingly in consultation with the involved tribes.

Sincerely,

Virgil Moose

Virgil Moose
Tribal Chairperson

Attachments
November 16, 2001 Tribal Letter to NAWS
July 15, 2008 Tribal Letter to NAWS
March 12, 2009 NAWS Letter to Tribe
2009-2010 Coso Monitoring Report Graph

Attachment #1

BIG PINE PAIUTE TRIBE OF THE OWENS VALLEY
Big Pine Indian Reservation

November 16, 2001

Commander
NAWCWD James Searnan
1 Administration Circle
China Lake, CA 93555-6001

RE: Owens Valley Native American Elders comments regarding their visit to Coso Hot Springs concerning the Draft Environmental Assessment for the Coso Geothermal Deep Test Well Project at Naval Air Weapons Station (NAWS) China Lake, California.

Dear Sir:

The Big Pine Paiute Tribe (Tribe) has assisted Ms. Janice Mitchell who is the Toiyabe Elders Program Coordinator in preparing and submitting comments by elders who were present on the visit November 1, 2001 to Coso Hot Springs. The following comments have been retyped verbatim and are attributed with elder and tribal affiliation.

Jeanette Swift, Fort Independence Paiute Elder:

"When I was a little girl my brother came home from being away and he was very sick. Our dad had the family all go to Coso for a mud bath and pray to get a healing from his sickness.

It was quite an experience on Nov. 1, 2001 when we all went in the Coso Hot Springs area. It changed so much and the steam was coming out so powerful, I felt that Mother Earth should not be touched anymore for these wells to be dug up. I hope that more people can come in and see all the disturbance that has been done on the sacred grounds that was for our Indian people to come and take their mud baths and use the Hot Springs, people need to speak out in this problem."

Norma Nielsen, Bishop Paiute Elder:

"I felt that we were treated like convicts and that we had to be watched as we came down here. I can remember when we came down before and got to put up camp and spend the night, we were respected this way. Now it looks like they want to do more damage to the sacred land that the Indian people used to use.

P.O. Box 700 ◆ 841 South Main Street ◆ Big Pine, CA 93513 ◆ Office: (760) 938-2003 ◆ Fax: (760) 938-2942

One of the spiritual leaders remembered when he was a little boy he wandered all over these hills and now it has to be locked up with security guards. This is our land and it is spiritual land, this is where we get healed, and our ancestors meet us here. We don't want them drilling more holes to see what is beneath the land, it is only to get the white man rich. In time, we probably won't be able to come down here anymore to get our mud for healing our bodies."

Alex David, Big Pine Elder:

"We came down to see all the steam coming up from the mother earth, bubbling sulphur and different colors of reds, greens, blues, purples and yellows. The muds looked real nice and I enjoyed this trip very much. I feel that the government is going to drill anyway without our feeling on how we think they should feel about our Indian sacred grounds. They're going to drill anyway."

Janet Shaw, Bishop Paiute Elder:

"My last trip here at Coso was in the '80's and was a lot different. There was more steam and mud coming from the ground and I was surprised to see the steam ducks up and working. We were shown the sites that are to be drilled in the future. I can imagine all the money that was put into this project and all the testing that has to be done. The tour guide was giving us some information on the deep test well program. The Indian people do not like what's happening to our spiritual Coso Ground. It means a lot to us that we have this for our memory of our ancestors. The healing pools which were very colorful then, now it is being taken from us."

Janice Mitchell, Bishop Paiute Elder:

"This was a very interesting trip for myself, to see how the Coso Hot Springs has changed since I took the Elders out there in the '90's. On Nov. 1, 2001 we were taken to the drill sites and had a lot explained to us. We walked to different areas. I felt like the government didn't really see how much this area meant to our Indian people and how much our people meant to this area. Elders told them it was our land and it was here for spiritual use only. It was there for prayer and healing for Indian peoples past and present who used this area for that purpose and that it meant a lot to us. I feel it should not be disturbed any more. Leave it alone."

Wesley Dewey, Bishop Paiute Elder:

"When we went to Coso Junction to see the old Indian Bath Sites, I thought we were going to have a little spiritual gathering and do some healing prayers for our people and [I was] really looking forward to it. But what we saw was a blow to our cultural and spiritual grounds. They dug holes and left the grounds all scarred up. Then they drilled holes and left pipes all over the place. The Hot Springs that used to be there is now nothing but mud. You can't bath anymore.

It looks like a trash pile now with pipes running all over the place. All these people are thinking about is the almighty dollar, and not what they are doing to our people, the land, and especially to mother earth. I sure don't like it."

It should be recognized that these comments come from a culture very concerned about preserving Coso Hot Springs. These individuals, as well as many others, visited Coso Hot Springs long before the United States Federal Government was even a thought. That statement alone explains the significance of these comments.

Sincerely,

Jason Warren
Big Pine Tribe Environmental Director

CHINALAKE PUBLIC/COMMENTS/010

Attachment #2

BIG PINE PAIUTE TRIBE OF THE OWENS VALLEY
Big Pine Indian Reservation

July 15, 2008

Captain Gary Peterson, U.S. Navy
Commanding Officer
Naval Air Weapons Station
1 Administration Circle
China Lake, CA 93555-6100

RE: Implementation of the two MOAs from 1979 regarding adverse effects to Coso Hot Springs as a result of geothermal development

The Big Pine Paiute Tribe of the Owens Valley is officially requesting a meeting with NAWS, China Lake, the California State Historic Preservation Officer, and the Advisory Council on Historic Preservation regarding the implementation of the following two MOAs and the adverse effects to Coso Hot Springs as a result of geothermal development.

(1) Memorandum of Agreement between the Commander, Naval Weapons Center, and the Coso Ad Hoc Committee, Owens Valley Paiute-Shoshone Band of Indians (July, 1979)

(2) Programmatic Memorandum of Agreement between the Commander, Naval Weapons Center, California State Historic Preservation Officer and the Advisory Council on Historic Preservation (November, 1979).

The Big Pine Paiute Tribe is a party to the first MOA listed above, and is a consulting party to the second. We assume that other involved Tribes will be participants in such a meeting.

A Section in the *Memorandum of Agreement between NAWS, China Lake and the Coso Ad Hoc Committee* states:

> 11. That material or substantial alteration or permanent disturbance of the hot springs or the pond shall not be permitted. Both the Naval Weapons center and the Native Americans pledge their mutual cooperative efforts to expeditiously develop a preservation and management plan acceptable to both parties and to the California state Office of Historic Preservation and approvable by the Advisory Council on Historic Preservation (p. 2).

P.O. Box 700 • 825 South Main Street • Big Pine, CA 93513 • Office: (760) 938-2003 • Fax: (760) 938-2942

In fact, "material or substantial alteration or permanent disturbance of the hot springs" has been permitted almost since the inception of the geothermal development. A study commissioned by the Navy (with no tribal input) came to the following conclusion: "…the timing of the onset of geothermal fluid withdrawal and changes in hot spring activity at Coso suggest a correlation" *Hydrologic Analysis of the Coso Geothermal System. Technical Summary*, prepared for the Navy's Geothermal Program Office by Innovative Technical Solutions, Inc. (p. 60).

A section in the *Memorandum of Agreement between the Commander, Naval Weapons Center, California State Historic Preservation Officer and the Advisory Council on Historic Preservation* states:

> In the event a perceptible change to the surface activity of the hot springs were to occur over a period of time as a result of the geothermal development program the Navy will cease those actions on the part of the Navy and/or its agents which can reasonably be presumed to be causing this effect and will make every reasonable effort to determine what actions could be taken to mitigate this change. The Navy will request the comments of the Owens Valley Paiute-Shoshone Band of Indians, the California State Historic Preservation Officer and the Advisory Council on Historic Preservation (p. 10).

There has been more than a perceptible change to hot springs for the last two decades. As the chart from the *Hydrologic Analysis of the Coso Geothermal System: Technical Summary, Figure 4 (p. 4)*, indicates, the Hot Springs have become so hot after the geothermal development that they have become unusable in the manner traditionally used by Native Americans, especially Elders (see **Attachment 1**).

Besides NAWS and the involved Tribes, this meeting would also include representatives from California SHPO and the ACHP. If desirable by all parties, Stephen Haberfield of Indian Dispute Resolution Services, Inc., may be available as a mediator for this meeting.

Please contact me at your earliest convenience so we can discuss this matter.

Sincerely,

Virgil Moose
Tribal Chairperson
Big Pine Paiute Tribe of the Owens Valley

cc: Reid Nelson, ACHP
Milford Wayne Donaldson, SHPO

2

Attachment 1

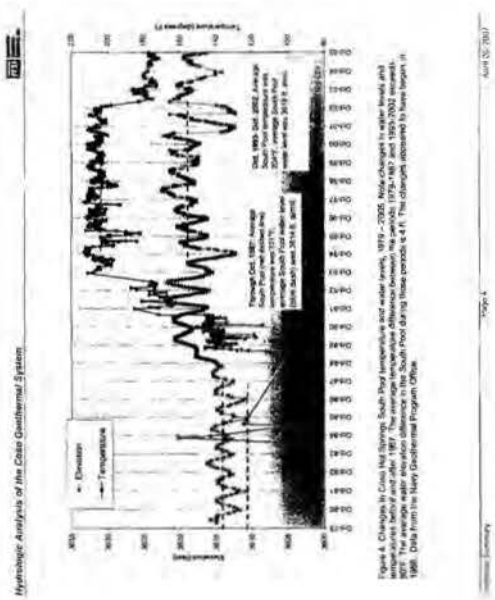


Figure 4. Changes in Coso Hot Springs South Pool temperature and water levels, 1972 – 2005. Note changes in water levels and temperature after the start of geothermal production in 1987. The average elevation difference in the South Pool during those periods is 4 ft. This change is assumed to have begun in 1986. Data from the Navy Geothermal Program Office.

3

DEPARTMENT OF THE NAVY
NAVAL AIR WEAPONS STATION
1 Administration Circle
CHINA LAKE, CALIFORNIA 93555-6100

IN REPLY REFER TO:
5090
Ser OPDK/169
March 12, 2009

Mr. Virgil Moose, Tribal Chairperson
Big Pine Paiute Tribe of the Owens Valley
P.O. Box 700
825 South Main Street
Big Pine, CA 93513

MAR 17 2009

Dear Chairperson Moose:

As discussed at the February 11, 2009 meeting in Death Valley, Naval Air Weapons Station (NAWS) China Lake acknowledges the Big Pine Paiute Tribe's desire to revise the existing Coso Hot Springs (CHS) access agreement and work with the Navy on the development of a preservation and management plan for the area. For that purpose, NAWS China Lake is initiating formal consultation with the Big Pine Paiute Tribe.

The Timbisha Shoshone, Big Pine Paiute, Lone Pine Paiute-Shoshone, and Bishop Paiute-Shoshone Tribal governments have testified that it is physically impossible for Native Americans to use the Coso Hot Springs in a traditional manner (which specifically includes immersion in mud and spring water, cooking, use of native plants, etc.) because there has been a perceptible change and substantial alterations in the hot springs since implementation of the geothermal program.

Navy's position is that current scientific data can not prove or disprove a correlation between geothermal operations and any perceptible changes that have occurred in the surface manifestations at the Coso Hot Springs. However, NAWS China Lake acknowledges that appreciable changes in the water temperature and elevation have occurred in the South Pool since the Navy first began recording data from the Coso Hot Springs area in the 1970s.

As requested by the Big Pine Paiute Tribe, NAWS China Lake is initiating consultation on a revised access agreement to the Coso Hot Springs and the development of a preservation and management plan. Mr. Mike Baskerville, Command Archaeologist will be contacting Tribal representatives shortly and provide examples of plans developed elsewhere that can serve as an outline for developing the CHS management plan. It is our understanding that the Owens Valley and Death Valley Tribes will then meet and submit suggestions for inclusion in the plan. Also as requested, the Coso Hot Springs access agreement will be revised to reflect changed discussed at the January 28th and February 11th meetings. Ms. Becky Jensen, Native American Liaison, will submit a draft to the Tribes for review by March 13th.

CHINALAKE PUBLICCOMMENTS/011

Document 5

5090
Ser OPDK/169
March 12, 2009

I look forward to working with you and your staff on finalizing the access agreement and the management plan.

Sincerely,

G. J. PETERSON
Captain, U. S. Navy
Commanding Officer

Copy to: Mr. Alan Bacock, Big Pine Paiute Tribe
Mr. Bill Helmer, Big Pine Paiute Tribe

Document 5

Attachment #4

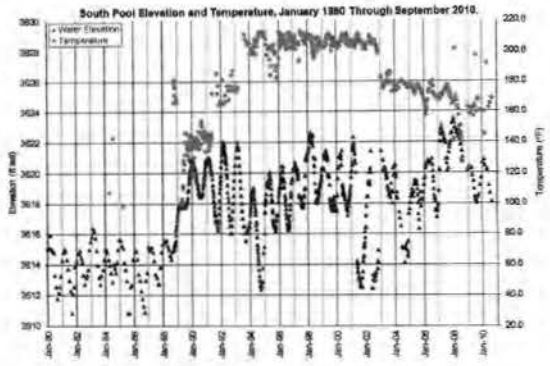


Figure 5. South Pool elevation and temperature trends from January 1980 through September 2010.

Document 6

BISHOP TRIBAL COUNCIL

November 8, 2012

NAWS China Lake Land Withdrawal LEIS
D.A. Lazar, Captain, U.S. Navy
Commanding Officer
Naval Facilities Southwest Desert IPT
1220 Pacific Highway
San Diego, CA 92132-5178

RE Draft Environmental Impact Statement (DEIS)/Legislative Environmental Impact Statement (LEIS) for renewal of Naval Air Weapons Station China Lake Public Land Withdrawal including draft CLUMP

Dear Captain Lazar, Commanding Officer

Thank you for allowing the Bishop Paiute Tribe (herein after the Tribe) the opportunity to comment on the Public Land Withdrawal: Draft Environmental Impact Statement (DEIS)/Legislative Environmental Impact Statement (LEIS) and the draft CLUMP. The Tribe's general and specific comments to the LEIS document are listed below, followed the general and specific comments to the CLUMP:

LEIS GENERAL COMMENTS:

14.2 1 Comment 1: The Bishop Paiute Tribal Council recommends ALTERNATIVE 2.

5.7 2 Comment 2: Most importantly the Tribe recommends Section 6 of National Historic Preservation Act as amended be adhered to.

5.8 3 Comment 3: The Tribe recommends that the existing 1979 Memorandum of Agreement (MOA) be updated and revised these updates would include Executive Order 13007 (Indian Sacred Sites) May 24, 1996 1st Amendment to the Constitution The American Indian Religious Freedom Act, to name a few. See comments pertaining to CLUMP

LEIS SPECIFIC COMMENTS

2.2.2.6 Transfer of Ownership of Coso Hot Springs and Prayer Site to Native American Tribes or Land Trust, with Establishment

"This alternative would transfer the ownership of Navy fee-owned lands to Native American tribal interests and establish a route of entry to the Coso Hot Springs and Prayer Site that would be free of Navy oversight and control. Notwithstanding that it would not itself have authority to execute such a transfer, the Navy has determined that mission requirements for effective land use controls to ensure safety and security requirements preclude this from being a viable proposal. Such an action would not meet the Navy's purpose and need as it would allow for

PAIUTE PROFESSIONAL BUILDING • 50 TU SU LANE • BISHOP, CA 93514
PHONE (760) 873-3584 • FAX (760) 873-4143

Document 6

unregulated entry onto an active military test range and place land use decision authority for lands within the test range with a non-Navy entity. Tribal access to the Coso Hot Springs and Prayer Site continues to be accommodated under the terms of a 1979 Memorandum of Agreement between the Navy and the Coso Ad Hoc Committee representing the Owens Valley Paiute-Shoshone Band of Indians. It should also be noted that a potential transfer of the Coso Hot Springs and Prayer Site is very speculative. The Navy does not view the property in question as being excess to its current or anticipated needs, nor would the Navy have authority to effect such a transfer itself even if it did".

14.3 4 Comment: The Tribe appreciates the Navy's desire for transfer of ownership of access to the Coso Hot Springs was taken into consideration in the development of alternatives but is disappointed that this alternative was eliminated from further consideration. The Tribe disagrees with this elimination and request that it be the topic of future government to government consultation. The Tribe still feels that transfer of ownership of the Coso Hot Springs land to the Tribes or a tribal controlled entity should be included in the range of alternatives when considering future land withdrawal. This is especially important given the spiritual importance of this site and gives the adverse impacts to this site that have been allowed to occur under Navy management. It is particularly troublesome that Employees and contractors serving the Coso Geothermal operations are given 24/7 access year round to their facilities on withdrawn land yet access is restricted to limited visits per year to the Coso hot springs which is located adjacent to the geothermal operations.

It is the Tribes opinion that the Navy has legal authority to implement any of these options:

1) Conveyance in fee ownership to the Bishop Paiute Tribe or consortium of Tribes organized in a nonprofit land trust.
2) Transfer of administrative responsibility over the land from the Navy to the Bureau of Indian Affairs to hold land in trust for the Tribes
3) Conveyance of a conservation easement to the Tribes or a tribal land trust
4) Granting a right of access to the Tribes under an improved Memorandum of Understanding with the Navy

3.5.4.4 Native American Values

"Among the analyses routinely conducted is an effort to model possible association between geothermal production and observed changes to the Coso Hot Springs. The independent analysis of the Coso geothermal system, including changes that had been observed in Coso Hot Springs starting in 1988, noted that recorded increases in water levels and temperatures at Coso Hot Springs appear to correlate with the 1987 onset of the geothermal program (ITSI 2007). The study went on to state that their scientific hydrologic modeling could not confirm this seeming correlation and that these changes may also be attributed to natural fluctuations such as those observed at other geothermal systems that have not undergone commercial development".

Comment:

5.9 5 When reviewing the technical version of this report along with the 12 conclusions presented at the end of that study we conclude that the preponderance of evidence suggests that the onset of geothermal activity is correlated with, and is the most likely cause for the perceptible change and adverse impact that began in the late. The Tribe does not recognize the summary study which instead of summarizing conclusions in the technical report brings up alternative

CHINALAKE PUBLICCOMMENTS/012

5 explanations and conclusions not clearly presented in the more detailed technical study. In our view this amounts to misrepresentation of the facts. To the Tribe the documented large pressure loss shown in the geothermal wells of the
5.9 large geothermal field combined with the steam phase driven source hydraulic connection at Coso Wash fault leave no other reasonable mechanism for sudden hydrologic changes that have occurred at the hot springs. The majority of the logical and scientific inquiry of the technical report seems to support this.

As a sovereign nation the Tribe asserts that the Navy is infringing on our spiritual and traditional lifeway's that have existed for thousands of years.

3.6.7.2 Coso Hot Springs- Geothermal Activity and Investigations

6 Comment: The Bishop Paiute Tribe has reviewed this section of the LEIS and strongly disagrees with the main conclusions of the Navy which seem to explain the adverse impacts that began to occur in the late 1980s with random variation or various alternative hypothesis to geothermal production including seismicity, hydrological variation etc. When reviewing the technical version of this report along with the 12 conclusions presented at the end of that study we conclude that the preponderance of evidence suggests that the onset of geothermal activity is correlated with; and
5.9 is the most likely cause for the perceptible change and adverse impact that began in the late. The Tribe does not recognize the summary study which instead of summarizing conclusions in the technical report brings up alternative explanations and conclusions not clearly presented in the more detailed technical study. In our view this amounts to misrepresentation of the facts. To the Tribe the documented large pressure loss shown in the geothermal wells of the large geothermal field combined with the examined disconnection with water table at Coso wash leave no other reasonable mechanism for sudden hydrologic changes that have occurred at the hot springs. The majority of the logical and scientific inquiry of the technical report seems to support this.

4.11 Hazardous Materials and Wastes:

7 Comment: The Navy generates Hazardous materials and wastes and transports such materials and wastes through communities even though this is in accordance with Title III of SARA (aka EPCRA) the Tribe is concerned with all
11.1 species and recommends officials, emergency response teams, Tribes within the surrounding communities be trained in case of a spill within their "jurisdictions".

COMMENTS REGARDING DRAFT COMPREHENSIVE LAND USE MANAGEMENT PLAN (CLUMP):

CLUMP GENERAL COMMENTS

CLUMP Executive Summary – 3rd paragraph reads: *In accordance with the provisions of the 1994 CDPA the LEIS is being prepared by the Navy and BLM to support the continued use of the federally withdrawn lands at NAWSCL.*

8 Comment 1: The Tribe recommends the revision of the existing MOA between the Navy and Native American Tribes. As a sovereign nation the Tribe asserts that the Navy is infringing on our spiritual and traditional life ways
5.8 that have exist for thousands of years. Who is more knowledgeable of our ways than us? A cooperative land management approach is most appropriate and positive. Furthermore, the Tribe request government to government
9 consultation to seriously discuss other alternatives to the proposed MOA revision as presented below. It is the Tribes opinion that the Navy has legal authority to implement any of these options:

1) Conveyance in fee ownership to the Bishop Paiute Tribe or consortium of Tribes organized in a nonprofit
14.4 land trust.
2) Transfer of administrative responsibility over the land from the Navy to the Bureau of Indian Affairs to hold land in trust for the Tribes
3) Conveyance of a conservation easement to the Tribes or a tribal land trust
4) Granting a right of access to the Tribes under an improved Memorandum of Understanding with the Navy

10 Comment 2: The Navy has not been good stewards of the land in its management practices. The Navy has failed in meeting their oversight obligations of the Geothermal Operations and has allowed adverse effects to occur to the
5.9 Sacred Site and the surrounding environment. The annual monitoring reports the Tribe receives are meaningless as the damage to the springs have already occurred. Our Elders have always felt there is a connection between the geothermal production and the increase in temperature at the hot springs.

11 Comment 3: Cooperative land management is the most appropriate and positive approach. With regards to access issues at Coso Hot Springs the Tribe recommends cooperative discussion regarding access options as presented below:

14.4
1. Conveyance in fee ownership to the Bishop Paiute Tribe or consortium of Tribes organized in a nonprofit land trust
2. Transfer of administrative responsibility over the land from the Navy to the Bureau of Indian Affairs to hold land in trust for the Tribes
3. Conveyance of a conservation easement to the Tribes or a tribal land trust
4. Granting a right of access to the Tribes under an improved Memorandum of Understanding with the Navy

CLUMP SPECFIC COMMENTS

CLUMP Section 1.5.5 - Nonmilitary Land Use Policy

"NAWSCL will continue to accommodate nonmilitary land uses to the extent that (1) these activities are compatible with the military mission; and (2) they do not create adverse safety, security, fiscal, regulatory, or environmental effects. Nonmilitary land use is grouped into four categories: Native American interests, educational and research activities, recreational activities, and commercial activities, as described in Section 2.4. NAWSCL will continue to maintain a Government-to-Government relationship with recognized Native American Tribes on matters of mutual interest and for undertakings requiring formal consultation. NAWSCL will also continue to coordinate with other non-federally recognized Tribes and accommodate requests for access to NAWSCL in accordance with current and or future agreements and policy".

9 Comment. The Tribe requests that the Navy not include the Tribes in the four groups as categorized (1.5.5).
13.19 Furthermore, the policy should be consistent with the other groups mentioned.

The Bishop Paiute Tribe looks forward to commencement of government-to-government discussions to be conducted in earnest and at the highest possible level within the federal government with respect to the development of land management policies and remedies regarding the mitigation and protection of cultural sites, and appropriate tribal access to culturally important sites on land currently managed by NAWS CL.
Please feel free to contact me at 760-873-3584.

Sincerely,

Bill Vega
Vice Chairman
Bishop Paiute Tribe

CC: Honorable Tribal Council
Anita Old Bull-Big Man, Tribal Administrator
Tribal Environmental Protection Agency
Raymond Andrews, Tribal Historic Preservation Officer
Brian Adkins, Bishop Paiute Tribe Environmental Director

October 26, 2012
P.O. Box 879
Newbury Park, CA 91319

Mr. Gene Beale
Environmental Planner
NAVFAC Southwest Desert IPT
1220 Pacific Highway
San Diego, CA 92132

Dear Mr. Beale:

Subject: Comments on the Draft EIS for China Lake

AIR QUALITY

1 You have been remiss in not addressing all of the state and national ambient air quality standards that are applicable in California.
3.1 **Your EIS must be revised to fully analyze:**

State and National Ambient Air Quality Standards Applicable In California Pollutant	Averaging Time	Standards in Parts Per Million by Volume (ppm) California	Standards in Parts Per Million by Volume (ppm) National	Standards in Micrograms Per Cubic Meter (µg/m3) California	Standards in Micrograms Per Cubic Meter (µg/m3) National	Violation Criteria California	Violation Criteria National
Ozone	1 Hour	0.09	Standard rescinded	180	Standard rescinded	If exceeded	Not applicable
Ozone	8 Hours	0.070	0.075	137	147	If exceeded	If exceeded by the mean of annual 4th highest daily values for a 3-year period
Carbon Monoxide	1 Hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year
Carbon Monoxide	8 Hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year
Carbon Monoxide	8 Hours (Lake Tahoe Basin only)	6.0	9	7,000	10,000	If equaled or exceeded	If exceeded on more than 1 day per year
Nitrogen Dioxide	Annual Average	0.030	0.014	57	100	If exceeded	If exceeded
Nitrogen Dioxide	1 Hour	0.18	0.100	339	188	If exceeded	If exceeded by the mean of annual 98th percentile values over 3 years
Sulfur Dioxide	Annual Average	No standard	0.030	No standard	80	Not applicable	If exceeded

CHINALAKE PUBLICCOMMENTS/013

Sulfur Dioxide	24 Hours	0.04	0.14	105	365	If exceeded	If exceeded on more than 1 day per year
Sulfur Dioxide	3 Hours	No standard	0.5	No standard	1,309	Not applicable	If exceeded on more than 1 day per year
Sulfur Dioxide	1 Hour	0.25	No standard	655	Not applicable	If exceeded	Not applicable
Inhalable Particulate Matter (PM10)	Annual Arithmetic Mean	Not applicable	Not applicable	20	Standard rescinded	If exceeded	Not applicable
Inhalable Particulate Matter (PM10)	24 Hours	Not applicable	Not applicable	50	150	If exceeded	For 1997 non-attainment areas, if exceeded on more than 1 day per year. For other areas, if exceeded by the mean of annual 99th percentile values over 3 years
Particulate Matter (PM2.5)	Annual Arithmetic Mean	Not applicable	Not applicable	12	15.0	If exceeded	If exceeded on a 3-year spatial average of data from designated stations
Fine Particulate Matter (PM2.5)	24 Hours	Not applicable	Not applicable	No standard	35	Not applicable	If exceeded by the mean of annual 98th percentile values over 3 years
Lead Particles (TSP sampler)	Calendar Quarter	Not applicable	Not applicable	No standard	1.5	Not applicable	If exceeded
Lead Particles (TSP sampler)	Rolling 3-Month Average	Not applicable	Not applicable	No standard	0.15	Not applicable	If exceeded during a 5-year period
Lead Particles (TSP sampler)	30 Days	Not applicable	Not applicable	1.5	No standard	If exceeded	Not applicable
Sulfate Particulate (TSP sampler)	24 Hours	Not applicable	Not applicable	25	No standard	If equaled or exceeded	Not applicable
Hydrogen Sulfide	1 Hour	0.03	No standard	42	No standard	If exceeded	Not applicable
Vinyl Chloride	24 Hours	0.01	No standard	26	No standard	If equaled or exceeded	Not applicable

Notes:

All standards except for annual PM10 and PM2.5 standards are based on measurements corrected to 25 degrees C and 1 atmosphere pressure. The carbinol PM10 and PM2.5 standards are based on direct flow volume data without correction to standard temperature and pressure. Decimal places shown for standard reflect the rounding or truncating convention used for evaluating compliance.

The "10" in PM10 and the "2.5" in PM2.5 size and particle size limits, these numbers identify the particle size class (aerodynamic diameter in microns) collected with 50% mass efficiency by certified sampling equipment. The maximum particle size collected by PM10 samplers is about 30 microns. The maximum particle size collected by PM2.5 samplers is about 5 microns.
Clear Sections: 40 CFR Parts 50, 51, and 58; CARB (2005a); EPA (2005a).

In California, air quality regulation is a joint responsibility between CARB and local air quality management agencies. Local agencies are either a single county or a multi-county agency, typically called an Air Pollution Control District (APCD) or an Air Quality Management District (AQMD). APCDs and AQMDs have primary responsibility for most air quality regulatory programs, with CARB retaining oversight responsibilities. CARB directly implements statewide regulatory programs for motor vehicles, portable equipment, and hazardous air pollutants. The project area is under the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD).

2
3.2 **You must identify if the MDAQMD has adopted other regulations that affect facility construction and operation.** Training activities would be subject to fugitive dust control requirements that prohibit creation of dust plumes that are visible beyond the property line of the emission source, and requires all "active operations" (construction/demolition activities, earthmoving activities, heavy or light duty vehicle movements, or creation of disturbed surface areas) to implement applicable best available control measures as defined by MDAQMD. You must summarize all best available dust control measures outlined in MDAQMD rules as general dust control measures. Enhanced dust control requirements would apply since the training is considered large operations. A large operation could be any active operations on property which contains 50 or more acres of disturbed surface area, or any earthmoving operation with a daily throughput volume of 5,000 cubic yards or more three or more times during the most recent 365-day period.

3
3.3 **You have not fully addressed Clean Air Act conformity.** Section 176(c) of the CAA requires federal agencies to ensure that actions undertaken in nonattainment or maintenance areas are consistent with the CAA and with federally enforceable air quality management plans. EPA has promulgated separate rules that establish conformity analysis procedures for highway/mass-transit projects (40 CFR Part 93, Subpart A) and for other (general) federal agency actions (40 CFR Part 93, Subpart B). General conformity requirements are potentially applicable to many federal agency actions, but apply only to those aspects of an action that involve on-going federal agency responsibility and control over direct or indirect sources of air pollutant emissions.

The EPA conformity rule establishes a process that is intended to demonstrate that the proposed federal action:

- Would not cause or contribute to new violations of federal air quality standards;
- Would not increase the frequency or severity of existing violations of federal air quality standards; and
- Would not delay the timely attainment of federal air quality standards.

The EPA 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. Emissions associated with stationary sources that are subject to permit programs incorporated into the SIP are not counted against the de minimis threshold.

In the DEIS, 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 increases exceed the relevant de minimis value, a formal conformity determination process must be followed. Federal agency actions subject to the general conformity rule cannot proceed until there is a demonstration of consistency with the SIP. **Your DEIS is currently inadequate in this regard.**

NOISE

4
2.21 **For the reason laid out below, the Draft EIS has not adequately addressed:**
1 - Noise Descriptors
2 - Decibel Scales
3 - Decibel Values
4 - Applicability with Plans, Policies and Regulations
5 - Federal Criteria and Standards
6 - State Criteria and Standards
7 - Local Criteria and Standards (specifically for San Bernardino County, Kern County and the City of Ridgecrest)
8 - Vibration

Noise is defined as unwanted or extraneous sound. Sound is caused by vibrations that generate waves of minute air pressure fluctuations. Air pressure fluctuations that occur from 20 to 20,000 times per second can be detected as audible sound. The number of pressure fluctuations per second is normally reported as cycles per second or Hertz (Hz). Different vibration frequencies produce different tonal qualities for the resulting sound. In general, sound waves travel away from the noise source as an expanding spherical surface. The energy contained in a sound wave is consequently spread over an increasing area as it travels away from the source. This results in a decrease in loudness at greater distances from the noise source.

Decibel Scales

Human hearing varies in sensitivity for different sound frequencies. The ear is most sensitive to sound frequencies between 800 and 8,000 Hz, less sensitive to higher and lower sound frequencies, and least sensitive to sound frequencies below 250 Hz. Peak sensitivity to pure tones typically occurs at frequencies between 2,000 Hz and 6,000 Hz. Relative sensitivity remains fairly high between about 250 Hz and 2,000 Hz. Relative sensitivity drops off slightly above 7,000 Hz, and drops off significantly below 200 Hz. In addition, relative sensitivity to different acoustic frequencies also varies with the intensity of the sound. Several different frequency weighting schemes have been developed, using different decibel (dB) adjustment values for each octave or 1/3 octave interval. Some of these weighting schemes are intended to approximate the way the human ear responds to noise levels; others are designed to account for the response of building materials to airborne vibration and sound. The most commonly used decibel weighting schemes are the A-weighted and C-weighted scales.

The "A-weighted" decibel scale (dBA) is normally used to approximate human hearing response to sound. The A-weighted scale significantly reduces the measured pressure level for low frequency sounds while slightly increasing the measured pressure level for some middle frequency sounds. The "C-weighted" decibel scale (dBC) is often used to characterize low frequency sounds capable of inducing vibrations in buildings or other structures. The C-weighted scale makes only minor reductions to the measured pressure level for low frequency components of a sound while making slightly greater reductions to high frequency components than does the A-weighted scale.

Common Noise Descriptors

Varying noise levels are often described in terms of the equivalent constant decibel level. Equivalent noise levels (Leq) are used to develop single-value descriptions of average noise exposure over various periods. Such average noise exposure ratings often include additional weighting factors for annoyance potential due to time of day or other considerations. The Leq data used for these average noise exposure descriptors are generally based on A-weighted sound level measurements, although other weighing systems are used for special conditions (such as blasting noise).

Average noise exposure over a 24-hour period is often presented as a day-night average sound level (Ldn) or a community noise equivalent level (CNEL). Ldn values are calculated from hourly Leq values, with the Leq values for the nighttime period (10:00 PM to 7:00 AM) increased by 10 dB to reflect the greater disturbance potential from nighttime noises. CNEL values are very similar to Ldn values, but include a 5 dB annoyance adjustment for evening (7:00 PM to 10:00 PM) Leq values in addition to the 10 dB adjustment for nighttime Leq values. Except in unusual situations, the CNEL descriptor will be within 1.5 dB of the Ldn descriptor for the same set of noise measurements. Unless specifically noted otherwise, Ldn and CNEL values are assumed to be based on dBA measurements.

Working with Decibel Values

The nature of dB scales is such that individual dB ratings for different noise sources cannot be added directly to give the dB rating of the combination of these sources. Two noise sources producing equal dB ratings at a given location will produce a composite noise level 3 dB greater than either sound alone. When two noise sources differ by 10 dB, the composite noise level will be only 0.4 dB greater than the louder source alone. Most people have difficulty distinguishing the louder of two noise sources that differ by less than 1.5 to 2 dB. In general, a 10 dB increase in noise level is perceived as a doubling in loudness. A 2 dB increase represents a 15 percent increase in loudness, a 3 dB increase is a 23 percent increase in loudness, and a 5 dB increase is a 41 percent increase in loudness.

When distance is the only factor considered, sound levels from an isolated noise source will typically decrease by about 6 dB for every doubling of distance away from the noise source. When the noise source is essentially a continuous line (e.g., vehicle traffic on a highway), noise levels decrease by about 3 dB for every doubling of distance.

Applicable Plans, Policies, and Regulations

Various federal, state, and local agencies have developed guidelines for evaluating land use compatibility under different noise level ranges. The federal Noise Control Act of 1972 (Public Law 92-574) established a requirement that all federal agencies must administer their programs in a manner that promotes an environment free from noise that jeopardizes public health or welfare. The US Environmental Protection Agency (EPA) was given the responsibility for: providing information to the public regarding identifiable effects of noise on public health or welfare, publishing information on the levels of environmental noise that will protect the public health and welfare with an adequate margin of safety, coordinating federal research and activities related to noise control, and establishing federal noise emission standards for selected products distributed in interstate commerce. The federal Noise Control Act also directed all federal agencies to comply with applicable federal, state, interstate, and local noise control regulations to the same extent that any person is subject to such requirements.

Although EPA was given major public information and federal agency coordination roles, each federal agency retains authority to adopt noise regulations pertaining to agency programs. EPA can require other federal agencies to justify their noise regulations in terms of the federal Noise Control Act policy requirements, but has no authority to approve or disapprove the noise regulations and policies of other federal agencies. The Occupational Safety and Health Administration has primary authority for setting workplace noise exposure standards. Due to aviation safety considerations, the Federal Aviation Administration has primary jurisdiction over aircraft noise standards.

Federal Criteria and Standards

In response to the requirements of the federal Noise Control Act, EPA (1974) has identified indoor and outdoor noise limits to protect public health and welfare (hearing damage, sleep disturbance, and communication disruption). Outdoor Ldn values of 55 dB and indoor Ldn values of 45 dB are identified as desirable to protect against speech interference and sleep disturbance for residential, educational, and health care areas. Noise level criteria to protect against hearing damage in commercial and industrial areas are identified as 24-hour Leq values of 70 dB (both outdoors and indoors).

In 1980 the Federal Interagency Committee on Urban Noise (FICUN) developed guidelines to evaluate whether existing and proposed land uses are compatible with prevailing noise levels. The primary federal agencies participating in the FICUN report included EPA, the Departments of Defense, the Department of Housing and Urban Development (HUD), the Department of Transportation, and the Veterans Administration. The FICUN guidelines address land use compatibility and recommend building design considerations according to three noise level categories:

Zone 1 = Ldn or CNEL levels below 65 dB;
Zone 2 = Ldn or CNEL levels of 65 to 75 dB; and
Zone 3 = Ldn or CNEL levels above 75 dB.

The FICUN guidelines indicate that all land uses are compatible with Zone 1 noise levels. Educational and residential land uses generally are not compatible with Zone 2 noise levels unless special acoustic treatments and designs are used to ensure acceptable interior noise levels. Residential and educational land uses are not compatible with Zone 3 noise levels. Industrial and manufacturing land uses may be acceptable in Zone 3 areas if special building designs and other measures are implemented.

The Federal Highway Administration (FHWA) has adopted criteria for evaluating noise impacts associated with federally funded highway projects and for determining whether these impacts are sufficient to justify funding noise mitigation actions (47 FR 131.29651-29656). FHWA noise abatement criteria are based on peak hour Leq noise levels, not Ldn or 24-hour Leq values. The peak 1-hour Leq criteria for residential, educational, and health care facilities are 67 dB outdoors and 52 dB indoors. The peak 1-hour Leq criterion for commercial and industrial areas is 72 dB (outdoors).

The relationship between peak hour Leq values and associated Ldn values depends on the distribution of traffic over the entire day. There is no precise way to convert a peak hour Leq value to an Ldn value. In urban areas with heavy traffic, the peak hour Leq value is typically 2 to 4 dB lower than the daily Ldn value. In less heavily developed areas, the peak hour Leq is often equal to the daily Ldn value. For rural areas with little nighttime traffic, the peak hour Leq value will often be 3 to 4 dB greater than the daily Ldn value.

HUD has established guidelines for evaluating noise impacts on residential projects seeking financial support under various grant programs (44 FR 135:40860-40866). Sites are generally considered acceptable for residential use if they are exposed to outdoor Ldn values of 65 dB or less. Sites are considered "normally unacceptable" if they are exposed to outdoor Ldn values of 65 to 75 dB. Sites are considered unacceptable if they are exposed to outdoor Ldn values above 75 dB.

CHINALAKE PUBLIC/COMMENTS/014

State Criteria and Standards

The California Governor's Office of Planning and Research (2003) has published guidelines for the noise element of local general plans. These guidelines include a noise level/land use compatibility chart that categorizes outdoor CNEL/Ldn levels into as many as four compatibility categories (normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable), depending on land use. For many land uses, the chart shows overlapping CNEL/Ldn ranges for two or more compatibility categories.

The noise element guidelines chart identifies the normally acceptable range for low density residential uses as CNEL/Ldn values less than 60 dB, while the conditionally acceptable range is 55 to 70 dB. The normally acceptable range for high density residential uses is identified as CNEL/Ldn values below 65 dB, while the conditionally acceptable range is identified as 60 to 70 dB. For educational and medical facilities, CNEL/Ldn values below 70 dB are considered normally acceptable, while values of 60 to 70 dB are considered conditionally acceptable. For office and commercial land uses, CNEL/Ldn values below 70 dB are considered normally acceptable, while values of 67.5 to 77.5 dB are categorized as conditionally acceptable. The overlapping CNEL/Ldn ranges are intended to indicate that local conditions (existing noise levels and community attitudes toward dominant noise sources) should be considered in evaluating land use compatibility at specific locations.

Local Criteria and Standards

Cities and counties in California are required to adopt a noise element as part of their general plans. Many cities and counties have incorporated the California Department of Health Services land use compatibility guidelines as a key item in the general plan noise element, while other cities and counties have developed their own land use compatibility guidelines. In addition to local general plan noise elements, some cities and counties have adopted noise ordinances to legally define noise nuisances. Local noise ordinances vary considerably in their format and coverage. Many noise ordinances establish property line performance standards for different land use or zoning categories. There is considerable variation among communities as to the types of noise sources covered under local noise ordinances.

5 **The DEIS must say if there is a noise element of the Kern County and San Bernardino County General Plans that identifies noise-sensitive land uses for: ?**

Residential uses,
Schools,
Hospitals,
2.22 Rest homes,
Long-term care facilities,
Mental care facilities,
Libraries,
Places of worship, and
Passive recreation uses.

6 **Your EIS must identify if Kern and San Bernardino Counties have adopted land use compatibility criteria as part**
2.23 **of the noise element of their respective County Land Use Plan.**

In Riverside County, for example, the noise element of the County General Plan includes numerous policies intended to minimize noise-related conflicts between adjacent types of land uses. These policies include the following:

- Discourage noise-sensitive land uses from being located in areas exposed to CNEL levels above 65 dBA;
- Guide noise-tolerant land uses into areas committed to land uses that are noise-producing, such as transportation corridors or areas adjacent to airports;
- Minimize noise spillover or encroachment from commercial and industrial land uses into adjoining residential neighborhoods or noise-sensitive areas;
- Discourage projects that cannot successfully mitigate excessive noise;
- Require commercial or industrial truck delivery hours to be limited when next to noise-sensitive land uses unless there is no feasible alternative or there are overriding transportation benefits;
- New land use development within Airport Influence Areas should comply with airport land use noise compatibility criteria contained in the applicable airport land use compatibility plan;
- Require development that generates increased traffic and subsequent increases in ambient noise level adjacent to noise-sensitive land uses to provide for appropriate mitigation measures;
- Ensure that construction activities are regulated to establish hours of operation in order to prevent or mitigate the generation of excessive or adverse noise impacts on surrounding areas;
- Require that all construction equipment utilize noise reduction features (such as mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer; and
- Consider the issue of adjacent residential land uses when designing and configuring all new non-residential development. Design and configure on-site ingress and egress points to divert traffic away from nearby noise-sensitive land uses to the greatest degree practicable.

7 **The DEIS must also identify if the noise element of the San Bernardino and Kern County General Plans also identifies**
2.24 **preferred noise standards for stationary noise sources that affect residential land uses.**

Again as an example, Riverside County has adopted a noise ordinance (Ordinance 847) to regulate noise sources on one property that may impact adjacent properties. The noise ordinance sets general noise standards according to the land use designation of the affected property. Table 5.10-4 summarizes the basic noise standards in Riverside County Ordinance 847. The Riverside County noise ordinance also includes special provisions related to sound amplification systems, live music, audio equipment, and power tools. The noise ordinance also provides for exceptions from the general and special noise standard provisions.

Vibration

The DEIS does not adequately analyze the impacts of vibration.

Ground-borne vibrations can be a source of annoyance to people or a source of structural damage to some types of buildings. Although vibration measurements can be presented in many different forms, peak particle velocity (PPV) is the unit of measure used most often to assess building damage potential. The California Department of Transportation (Caltrans) has identified vibration impact criteria for both building damage potential and human annoyance (Caltrans 2002, 2004). These references are listed below. Both human annoyance effects and building damage effects depend in part on whether vibration events are isolated, discrete events or a relatively continuous episode of vibrations. In general, there is less sensitivity to single, discrete events than to continuous events or frequently repeated discrete events.

You must utilize the following references for adequate analysis

Caltrans (California Department of Transportation). 2002. Transportation Related Earthborne Vibrations. Technical Advisory TAV-02-01-R9601. Sacramento, CA. Internet Web site: http://www.dot.ca.gov/hq/env/noise/ publications.htm. Accessed on March 04, 2008.

Caltrans (California Department of Transportation). 2004. Transportation- and Construction-Induced Ground Vibration Guidance Manual. Prepared by Jones & Stokes. Sacramento, CA. Internet Web site: http://www.dot.ca.gov/hq/env/noise. Accessed on March 04, 2008.

8 **The EIS must summarize Caltrans criteria for assessing the effects of ground-borne vibration.** Type of criteria can be either
2.25 human response OR building damage. Threshold conditions pertain to the perceptibility for human response, or it can involve varying levels of cosmetic damage for building damage. **The DEIS must analyze the peak particle velocity in inches/second to determine if vibration thresholds will be exceeded, especially as a result of transient and/or continuous/frequent sources in all areas and airspace proposed for use by the Department of the Navy.**

9 The DEIS must also include consideration of ground-borne vibrations. The following land uses are typically identified by the noise
2.26 element in a County land use plan as being vibration sensitive:

•Hospitals,
•Residential areas,
•Concert halls,
•Libraries,
•Sensitive research operations,
•Schools, and
•Offices.

10 **The DEIS must consider noise and vibration mitigation to vibration including the following:**

•Restrict the placement of sensitive land uses in proximity to vibration-producing land uses, and
2.27 •Prohibit the exposure of residential dwellings to ground vibration from passing trains that would be perceptible on the ground or second floors (vibrations are presumed to be perceptible if they exceed a peak particle velocity of 0.01 inch per second over a range of 1 to 100 Hz).

GEOLOGY AND EARTHQUAKE HAZARD

The DEIS is not adequate in its recognition and analysis of compliance with the following application State of California laws:

Alquist-Priolo Earthquake Fault Zoning Act

11 The Alquist-Priolo Earthquake Fault Zoning Act of 1972 regulates development and construction of buildings intended for human
6.1 occupancy to avoid the hazard of surface fault rupture. This act provides mitigation against surface fault rupture of known active faults beneath occupied structures, and requires disclosure of the presence of any seismic faults to potential real estate buyers and a 50-foot setback for new occupied buildings. The Alquist-Priolo Earthquake Fault Zoning Act helps define where fault rupture is most likely to occur. This act groups faults into categories of active, potentially active, and inactive. **This information must be disclosed in the EIS.**

Seismic Hazards Mapping Act

12 The Seismic Hazards Mapping Act of 1990 directs the California Geological Survey to delineate seismic hazard zones. The purpose of
6.2 this act is to reduce the threat to public health and safety, and to minimize the loss of life and property by identifying and mitigating seismic hazards. These seismic hazards include areas that are subject to the effects of strong ground shaking such as liquefaction, landslides, tsunamis and seiches. Cities, counties, and state agencies are directed to use seismic hazard zone maps developed by the California Geological Survey in their land use planning and permitting processes. This act requires that site-specific geotechnical investigations **There must be undertaken before any land acquisition can proceed. This information must be disclosed in the EIS.**

PALEONTOLOGICAL RESOURCES

13 Paleontological resources constitute a fragile and nonrenewable scientific record of the history of life on earth. The BLM policy is to
5.5 manage paleontological resources for scientific, educational, and recreational values and to protect these resources from adverse impacts. To accomplish this goal, the USMC and your cooperating agency (BLM) must ensure that proposed land uses that it initiates or authorizes do not inadvertently damage or destroy important paleontological resources on public lands.

To ensure the protection of paleontological resources, the USMC considers paleontological data as early as possible in the decision-making process for any project. As part of this ongoing consideration, the USMC and BLM must collate existing information on paleontological resources and uses this information to classify the geologic formations present for their potential to contain vertebrate fossils or invertebrate or plant fossils that are scientifically important. **The EIS must include this information.**

Applicable Plans, Policies, and Regulations

The major laws protecting paleontological resources on federal lands include the Paleontological Resources Preservation Act (PRPA) which was signed into law as part of the Omnibus Public Lands Management Act (OPLA) of 2009. The PRPA requires the Secretary of the Interior to manage and protect paleontological resources on federal land using scientific principles and expertise, and requires the USMC to develop appropriate plans for inventorying, monitoring, and the scientific and educational use of paleontological resources, in accordance with applicable agency laws, regulations, and policies. Where possible, these plans should emphasize interagency coordination and collaborative efforts with non-federal partners, the scientific community, and the general public.

Other major authorities protecting paleontological resources on federal lands are the Federal Land Policy and Management Act (FLPMA), NEPA, and various sections of regulations.

14 While paleontological resources are often discussed in parallel to or linked with historical and cultural resources in planning and environmental impact analyses, the identification and classification of paleontological resources is based on geologic units. **BLM is a cooperator on your EIS. Therefore, you should use their system for analyzing impacts on paleontological resources.** On October 15, 2007, the BLM formalized the use of a new classification system for identifying fossil potential on public lands with the release of instruction memorandum IM 2008-009. The Potential Fossil Yield Classification (PFYC) system is based on the potential for the occurrence of significant paleontological resources in a geologic unit, and the associated risk for impacts to the resource based on federal management actions. Occurrences of paleontological resources are closely tied to the geologic units (i.e., formations, members, or beds) that contain them.

5.6 Using the PFYC system, geologic units are classified (Class 1 – Very Low through Class 5 – Very High) based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts, with a higher class number indicating a higher potential. It is used to set management policies and not intended to be applied to specific paleontological localities or small areas within units.

While they are being updated to reflect the requirements of the PRPA and the PFYC system, the BLM Manual 8270 and BLM Handbook H-8270-1 contain the agency's guidance for managing paleontological resources on public land. The manual has more information on the authorities and regulations related to paleontological resources. The handbook gives procedures for permit issuance, requirements for qualified applicants, information on paleontology and planning, and a classification system for potential fossil-bearing geologic formations on public lands.

Your DEIS is currently not adequate in its analysis on paleontological resources.

PUBLIC HEALTH, SAFETY, TRANSPORTATION AND ACCESS

Oil Pollution Prevention (40 CFR Part 112)

The goal of the oil pollution prevention regulation in 40 Code of Federal Regulations (CFR) Part 112 is to prevent oil discharges from reaching navigable waters of the United States or adjoining shorelines. Facilities that could reasonably be expected to discharge oil into navigable waters in quantities that may be harmful are required to develop and implement Spill Prevention, Control and Countermeasures (SPCC) plans per the SPCC rule.

Occupational Safety and Health Administration

The Occupational Safety and Health Administration (OSHA) administers health standards that (1) provide regulations for safety in the workplace, (2) regulate construction safety, and (3) require a Hazards Communication Plan. The plan includes identification and inventory of all hazardous materials for which Material Safety Data Sheets (MSDS) would be maintained, and employee training in safe handling of said materials.

Federal Aviation Administration Regulations (14 CFR 77)

Title 14 CFR Section 77 contains standards for determining physical obstructions to navigable airspace. Form 7460-1, Notice of Proposed Construction or Alteration, must be filed with the Federal Aviation Administration (FAA) if an object to be constructed has the potential to affect navigable airspace according to these standards.

Federal Transportation Regulations (49 CFR, Subtitle B)

Title 49 CFR, Subtitle B, contains procedures and regulations pertaining to interstate and intrastate transport, including hazardous materials program procedures; and

State of California

California Environmental Protection Agency

The California Environmental Protection Agency (Cal EPA) unifies California's environmental authority, consolidating the California Air Resources Board (CARB), State Water Resources Control Board (SWRCB), Regional Water Quality Control Board (RWQCB),

CHINALAKE PUBLIC COMMENTS/015

Document 7

Integrated Waste Management Board (IWMB), the DTSC, Office of Environmental Health Hazard Assessment (OEHHA), and the Department of Pesticide Regulation (DPR) under one agency. The California Hazardous Waste Control Law is administered by Cal EPA's DTSC.

Department of Toxic Substance Control

The DTSC is the primary agency in California that regulates hazardous waste, administers clean-ups of existing contamination and looks for ways to reduce hazardous waste produced in California. The DTSC regulates hazardous waste in California primarily under the authority of RCRA and the California Health and Safety Code. The DTSC manages, maintains and monitors the Cortese list of hazardous waste sites. The Cortese list, or Hazardous Waste and Substances Sites List, is a planning resource used by the state, local agencies, and developers to comply with CEQA requirements in providing information about the location of hazardous materials release sites

California Emergency Management Agency

The California Emergency Management Agency (CalEMA) was formed January 1, 2009 as a result of a merger between the Governor's Office of Emergency Services (OES) and the Office of Homeland Security. The Hazardous Materials Unit of the CalEMA is responsible for HAZMAT emergency planning and response, spill release notifications, and HAZMAT enforcement of the Unified Program. The OES provides emergency response services in support of local jurisdictions

California Public Utilities Commission

You must state and analyze whether you would use the CPUC General Order 95 and 165, as related to fire-safe design and maintenance practices for transmission lines, to establish minimum requirements for the Project regarding inspection (including maximum allowable inspection cycle lengths), condition rating, scheduling and performance of corrective action, record keeping and reporting, in order to ensure a safe and high-quality electrical service.

California Vehicle Code

The California Vehicle Code contains regulations applicable to roadway damage, licensing, size, weight, and load of vehicles operated on highways, safe operation of vehicles, and the transportation of hazardous materials.

San Bernardino and Kern County Plans

The DEIS has not adequately addressed all applicable plans, policies and regulation of the:

San Bernardino and Kern County Department of Environmental Health

San Bernardino and Kern County County Fire Departments

All Other Applicable County Departments

OTHER COMMENTS

Please include a glossary in the EIS

Due to the volume and complexity of this project and EIS, please extend the comment period for an additional 90 days.

Please schedule formal public hearings on this proposal

Sincerely,

James Blackwell

Document 8

Posted by: H. Marie Brashear (waterforwildlife@yahoo.com) **on** Oct 05, 2012 / 4:32PM

1
15.6 "I sent in this document but could not correct for errors. Tis one has been corrected and I am send it again. You may discard the first one. First, I want to thank you for converting to a form of Adobe pdf. that allows conversion to word and excel. Second, I wanted to thank you for saying you would

2
4.1 consider the possibility of antelope on NAWSCL.

3
13.9 1) Beginning with the CLUMP Executive Summary the document needs many fixes in the materials presented. Words are broken with spaces. Other words have hanging end letters. There are large spaces here and there. It is possibly a conversion to pdf. problem however, the entire document before this is fine. It is just the CLUMP.

4
1.6 2) The maps which show non-military activities should reflect the Coso Cold Springs used by Darwin as a water source since the 1800's. The name for the springs should be uniform on all Navy documents. Some of them refer to these springs as the Darwin Springs.

5
1.7 3) The Navy should meet with local Rockhounds to identify all the known locations on the base. Then the base could make decisions as to which would be available to the public taking safety into consideration. (Locate and map (GIS) gem and mineral locations on NAWSCL) I would suggest Ron Schiller, as the contact person. History: There were regular rockhounding (gem and mineral collecting) trips on the base until 1969-1970. Then off and on depending on the person in charge. Then no trips for many years. The base should again allow rockhounding on NAWS China Lake. At least one trip should happen the weekend of the local club's show which always occurs on the same weekend each year.

6
1.8 4) At least one and maybe several historic 4x4 tours over historic roads to a historic place or places. (Wingate Wash could serve both 4X4 and rockhounds) I know this might not be able to happen because it is near a test sight.) The base could train some tour guides as they do with the petroglyph

7
4.2 5) I am concerned about the burros, and the plan sanctioning removal of ALL burros. I would support the 100 percent removal if it happens in those areas with bighorn sheep. Otherwise the burros are a historic thing so a few should always be present on the base. (They also provide food for Mt Lion.)

8
13.1 6) The public couldn't really comment on all aspects of the plan as a couple of supporting documents were not provided. It appears that a major portion of the CLUMP is predicated on the Integrated Natural Resources Management Plan (INRMP) and the Integrated Cultural Resources Management Plan (INCRMP). One spot even says that one of them, I can't remember which one is still in draft. So maybe the public could be provided copies of these two documents. They are referenced over and over again.

9
1.9 7) China Lake NAWS should NOT, NOT, NOT share anything but air space with Fort Irwin. Generally speaking, China Lake is a wonderful caretaker of the lands under its umbrella. Fort Irwin's mission is different and they are not.

Document 8

10
13.27 8) Pages 3-4 and 3-5 are headed military south range and military north range. Are they place holders or is there stuff too secret for the public to see? If so they should have some additional words.

11
4.3 9) Under NO circumstance should you list the Mt. Lion as a species of concern on the base. They are not now, nor were they ever Rare, Threatened or Endangered. They have already decimated the Bighorn sheep herd in Wyman Canyon. (extinct) They have wiped out two deer herds in the Sequoia. So they don't need special treatment on the base. They can just be. An unintended consequence of removing all the burros

12
4.4 will be the Mountain Lion will do as they did in Death Valley which was they killed all or almost all of the Bighorn. That was one of the things the NPS got back when Death Valley was expanded was the Bighorn in the Panamint Mountains.

13
2.20 10) Noise should not be a big issue. It should only become an issue if it is regularly impacting a school or a hospital. Then the corridor or lane should be move a tiny bit to the east or west to correct that problem. I do not think it is the Navy's responsibility to make someone's property more valuable or less valuable depending on the number of over flights. The Navy has several missions at NAWSCL and they should be the priority. The folks who purchased property or came here to live knew ahead of time that the Navy was here.

14
1.10 11) I worry that the BLM lands which are being withdrawn will at some future point in time be subject to the same kind of WEMO legal action as the non military lands and that the Navy would have to do a roads/routes/trails inventory and designate them open, open limited, and closed. The same with the BLM's court ordered inventory of seeps and springs and condition thereof. I believe the roads, routes and trails should be inventoried, assigned a number and designated by the military under their agreement with BLM as open limited to whatever the needs of the

15
7.4 military are. The springs, seeps, and guzzlers should be inventoried, GPSd, photos taken spring and end of fall. These should be put in the back of the file cabinet just in case.

These comments are submitted for me and the National Outdoor Coalition. It is likely that more will follow.
Mari Brashear
"

Document 8A

H. Marie Brashear
941 W. Ridgecrest Blvd.
Ridgecrest, CA 93555

February 11, 2013

RE: NAWS/CL EIS/LEIS

Naval Facilities Engineering Command
Southwest – ATTENTION: NAWS/CL
Land Withdrawal Renewal EIS/LEIS
Project Manager (Mr. Gene Beale)
1220 Pacific Highway,
San Diego, CA 92132-5190 gene.beale@navy.mil

Dear Mr. Beale:
These comments are submitted for me and for the Western Rockhound Association (WRA). First I want to thank you for providing the missing documents. Second I want to state that the Navy at China Lake is a great caretaker of the resources within the base boundaries.

1
After reading several documents I am going to provide specific comments only on the INRMP. The INRMP is referred to often throughout the EIS and LEIS. For the most part it is well done. However, it needs to be updated in several areas. Recreation is probably the most out of date. There is a chart which says that OHV use is incompatible with the base mission. ....even tours. I would agree if "cross country travel" was being considered but OHV travel over existing roads is not damaging or incompatible. These tours one or two a year could be done similar to the petro glyph tours. The Gear Grinders 4-Wheel Drive Club has several members who have taken both the BLM and the Museum classes and would be great tour guides. The chart and some of the notes state that hunting is

13.56 incompatible and is not happening. This is incorrect. Hunting occurred this past season. Next the chart says that gem and mineral collecting is incompatible. In the past this has always been a base commander's decision. Rockhounding has been allowed depending on the view of the base commander. One trip to collect rocks each year during the local clubs show would not be incompatible. Various base Commanders have allowed equestrian groups to trail ride down petro glyph canyon. These activities should be allowed as part of the INRMP/CLUMP/EIS/LEIS

The INRMP also says there should be continued evaluation of opportunities for recreation on the base. Periodic review of opportunities of instituting new activities is also within the INRMP. I would encourage the base to update the INRMP to at least current activities. Local residents should be included as parties to the evaluations.

2/**13.57** I would also like to remind the base of unintended consequences. When the National Park Service reduced the burro numbers to almost none, Big Horn Sheep were almost extinct within the then

CHINALAKE PUBLICCOMMENTS/016

Document 8A

2/13.57 boundaries. Mountain lion had survived on horse and burro and took Big Horn when these were not available. The recent episode with the Tui Chub is another example of unintended consequences.

I and the Western Rockhound Association support this withdrawal and the potential increase in activities.

Sincerely,

H. Marie Brashear, President

Document 9

Posted by: Stuart Breil (stubreil@yahoo.com) **on** Nov 06, 2012 / 11:50PM

"Dear Sir:

Thank you for considering the following comments on the draft NAWSCL LEIS.

1 / 10.16 The LEIS, see page 4.10-2, acknowledges 26 aircraft incidents related to airfield events occurring from 1958 to 2010. Any aircraft incident, on-installation or off-installation, has the potential to sustain one or more human fatalities. Therefore, the potential for airfield events to create a safety impact, prior to mitigation, is clearly significant. The LEIS mitigation discussion is limited to a vague reference to "established safety procedures" and a reference to "relatively low population density". Generalizations regarding pilots adhering to unspecified safety procedures are meaningless. Limiting the number of fatalities due to low population density is likewise meaningless. Limiting fatalities to any arbitrary number is unacceptable. The LEIS needs to be clear regarding how the imposed mitigation is going to make the risk of a serious injury or a fatality, on-installation or off-installation, not significant.

2 / 10.17 Comparing the NAWSCL 2011 AICUZ figure 3-4 with the 2007 AICUZ figure 3-4 indicates that touch-and-go route 26T1 has been moved approximately one-half mile south toward Inyokern Road. No rationale was given in the 2011 AICUZ to justify the change in the route. Route 26T1 is the only route that changed. This change to the route will artificially increase the noise in the northern part of Ridgecrest. The obvious mitigation for the increased noise is to change the route back to the previous route documented in the 2007 AICUZ.

3 / 10.20 The 2011 AICUZ departure flight routes shown in figure 3-1 Titled "Departure Flight Routes" will needlessly increase the safety risks and noise levels over the city of Ridgecrest. Departure routes 14D1/14D2 and 14D3 all make turns to the west after takeoff. This maneuver after takeoff points the aircraft flight paths over the city of Ridgecrest. Should engine failure occur during the 14D1, 2, 3 westward maneuvers the aircraft could impact in the city of Ridgecrest. A simple mitigating solution to decrease risk and noise presented by the projected 14D1, 2, 3 departures would be to have the departing aircraft continue straight out with no change in direction to the west. These straight out departures from runway 14 would lower the risk and noise to Ridgecrest since most of the flight would be over Navy property. When runway 14 is active for departures, aircraft arrivals would have to be routed from the east or west. Arrivals from the south would be acceptable if the route was clear of the departure corridor.

Document 9

4 / 10.20 It's also not clear why all departing aircraft from China Lake airfield could not go down the center of the Navy property just west of Jacks Ranch Road. Figure 3-1 from the 2011 AICUZ report shows many departure profiles that are not down the center of the Navy property west of Jacks Ranch Road. Having all departing aircraft fly the center of the route would lower the safety risk and noise to Ridgecrest..

I suggest there are some simple changes to the departure corridors that would mitigate the safety risk and noise to the city of Ridgecrest and its neighbors.
1. Have all runway 14 departures fly straight out and make no westward maneuvers.
2. Have all other departing aircraft from China Lake airfield fly down the center of the Navy property that is just west of Jacks Ranch Road.
"

Document 10

Naval Air Weapons Station China Lake Land Withdrawal

Comment Card

Comments can be submitted at any public meeting or postmarked by November 8, 2012.

1 / 15.4 I think you are being pretty good stewards of the land, and you have good people

Name: Dennis Bowe
Address: [redacted]
City: [redacted] State: [redacted] Zip Code: [redacted]
Telephone: [redacted] E-mail: [redacted]

www.ChinaLakeLEIS.com

CHINALAKE PUBLICCOMMENTS/017

Document 11

September 24, 2012

Mr. Gene Beale
NAWS China Lake Land Withdrawal LEIS Project Manager
Naval Facilities Southwest Desert IPT
1220 Pacific Highway
San Diego, CA 92132-5167

Dear Mr. Beale,

My wife and I own a portion of the thirty six-acre parcel just south of the Faller Public School where the airplane crashed 30 years ago. Since the location is right next to a public school, we thought the Navy would fix its safety problems. We had an opportunity to sell the parcel a few years ago to a developer who was interested in developing the land. The land sale fell through when the developer backed out due to pressure from the Navy. The Navy told the city the area was unsafe for development. We are now sitting on land that we hoped would

1 be worth some money, but it isn't due to Navy insistence that the area is unsafe. The EIS now states there is no safety problem, but we are out a significant amount of money because
10.31 the Navy said just a couple years ago the land was not safe. Residential land directly adjacent to a public school should be valuable, and would be if it were not for the Navy declaring it unsafe. Please clarify in the EIS what is going on, is the school safe and is our property safe?

2 The noise level in the area also appears to be going up. Please explain.
2.19

Sincerely,

Doug Butler
Rose Marie Butler

Doug & Rose Marie Butler
[redacted]

Document 12

November 1, 2012
[redacted]

Gene Beale, Environmental Planner
NAVFAC Southwest Desert IPT
1220 Pacific Highway
San Diego, CA 92132

Dear Mr. Beale,

Regarding the Draft EIS for China Lake, the following public concerns and issues were raised during scoping and are not adequately addressed in the Draft EIS:

Land Use and Public Access

1 *Impacts from military overflights* – The impacts are not clearly stated that would be associated with an
1.15 expected increase by up to 25 percent over existing conditions. There is some discussion of the impacts on songbirds but there is little or no analysis of impacts on wilderness character as well as human species.

2 *Restricted access to Native American sites, including Coso Hot Springs and Prayer Site and petroglyphs on the Installation* – Your EIS refers to continued discussions planned through leadership and
1.16 consultation meetings. If more of those have taken place, please include the results of such meetings in the Final EIS.

3 *Restricted access to public lands for recreation* – Your statement that recreation would be
1.17 "accommodated either on a case-by-case basis or according to established agreements and procedures" is too vague and non-descriptive. As a result, your analysis is incomplete. To fully disclose anticipated impacts, the Final EIS must be more specific as to which activities will be accommodated and which will not.

4 *Health and safety risks from NAWSCL missions* – The CLUMP must be included as an appendix to the
1.18 EIS if you are going to claim that "the CLUMP formalizes and streamlines land management practices, ensures operational readiness by facilitating ongoing and evolving test and training events, protects public health and safety, protects cultural resources, and conserves and protects natural resources."

5 *Impacts from the operation of geothermal facilities located within the project area* – The Final EIS must
5.19 identify the types of mitigation that would be proposed should changes to the surface activity of the Hot
6 Springs occur as a result of geothermal development. The MOA (U.S. Navy 1979b) is quite dated and
5.20 may need to be updated based on current technology and other advances.

Cultural Resources

Impacts on the tribal use of Coso Hot Springs and Prayer Site - Native American access to the Coso Hot
7 Springs and Prayer Site would continue to be conducted in accord with the existing MOA between
5.21 NAWSCL and Native American tribes. Please include this MOA as an appendix in the Final EIS. At present, it is not "readily available" to the public so that it can be incorporated by reference.

8 *Concern over restricted access to petroglyphs* – The EIS does not mention this concern that was raised
5.22 as a significant scoping issue.

9 *Impacts on archaeological resources during construction* – The Draft EIS only acknowledges that the
5.23 Ridgecrest Solar Power Project involves construction of new facilities which would result in a higher

Document 12

9 potential for the loss or destruction of archaeological resources. Is this the only construction with such
5.23 potential?

10 *Need for formal tribal consultation* – The Draft EIS mentions "Consultation with the CRPM" but does not
5.24 acknowledge the plans for formal Tribal consultation other than to say that the consultation process would be initiated if an adverse impact is anticipated. The Final EIS must be more clear about how the Tribes would be involved and what exactly are the established NAGPRA procedures to be followed.

Water Resources

11 *Impacts on surface water and groundwater upstream and downstream of the project area* – Please spell
7.14 out the provisions of the existing cooperative groundwater management agreement between the Installation and other participating water purveyors. Can this agreement be included as an appendix in the Final EIS? At present, it is not "readily available" to the public so that it can be incorporated by reference.

12 *Impacts on the Rose Valley Water Basin from Navy use of groundwater and from geothermal plant operations* – The DEIS acknowledges that long-term groundwater extraction (up to 4,680 acre-ft/yr) from
7.15 the local, near surface groundwater aquifer, to augment geothermal reservoir fluid levels would likely have significant long-term impacts on groundwater resources in Rose Valley. To the extent possible, these impacts need to be more clearly spelled out and quantified in specific measurable terms. It would also seem that some mitigation could be devised to deal with these significant long-term impacts.

13 *Storm-water-related impacts, including post-construction hydrologic impacts* – This scoping issue raised
7.16 by the public has not been addressed. In the Derwin CSD, you say that BMPs would be required for construction repairs, as well as post-construction stabilization for long-term protection. However, you need to address this scoping issue for all post-construction hydrologic impacts in all areas of the project.

14 *Potential impacts from recycled water use and discharge* – This scoping issue has not been adequately
7.17 addressed. You acknowledge that a portion of the annual hazardous waste generated by NAWSCL airfield and ground troop training activities would be recycled, but you do not identify its nature or quantity that amount to provide rationale for your conclusion about it insignificance.

15 *Consideration for a long-term easement that would allow the Darwin Community Services District to*
7.1 *access Coso Cold Springs* – The Final EIS should state whether the Dept. of the Navy supports a renewed agreement to access the spring in perpetuity so that routine and emergency maintenance can be performed on the dirt access road when needed.

Biological Resources

Impacts on aquatic and terrestrial habitat from fragmentation of streams, riparian areas, or other waters
The Draft EIS only addresses the potential of ground training within aquatic habitat and concludes no impact on the Mojave Tui Chub. The EIS has not acknowledged, nor has it analyzed, the public scoping
16 issue associated with habitat fragmentation. The same is true for your analysis of impacts to riparian
4.14 habitat for flycatchers, vireos and towhees.

17 *Impacts on flora and fauna, especially threatened and endangered species* - In the Final EIS, please lay
4.15 out your specific needs, plans and potential availability of funding for additional focused plant and animal species surveys of the target and test sites, and associated buffers, to better define the distribution and density of federally listed threatened and endangered species, other federally protected species, and NAWSCL-sensitive species.

18 *Noise impacts on wildlife* – The Draft EIS presents an unsubstantiated conclusion (based on a USAF
4.16 study) that aircraft noise would not impact desert tortoise. Noise from aircraft overflights, ordnance delivery, or other military activities can disturb wildlife. A number of studies of the effects of noise on wildlife have been conducted in diverse settings. Noise does directly affect wildlife and these effects are

Document 12

increased by the magnitude, frequency, and duration of the noise. Regarding significance of such changes, wildlife responses to aircraft range from apparent disregard to panic fleeing, and vary with season, reproductive status, exposure to aircraft, aircraft type, distance from aircraft, and other factors. Studies indicate that ungulates (hoofed animals) may respond to low-level overflights with increased heart rates and have been observed fleeing low-level aircraft. For further info on this, see the Draft Legislative Environmental Impact Statement for the Renewal of the Barry M.Goldwater Range Land Withdrawal. September 1998. (DoD 1998).

19 *Consideration for the reintroduction of antelope on the Installation* – This significant public issue raised
4.17 during scoping has not been mentioned or addressed in the Draft EIS.

20 *Consideration for partnerships to maintain guzzlers for wildlife on the Installation* - This significant public
4.18 issue raised during scoping has not been mentioned or addressed in the Draft EIS.

21 *Consideration of options for the management of wild horses and burros* – The Wild Horse and Burro
4.19 Management Plan (WHBMP) should be included as an appendix or provided on-line for accessibility by the public. Carrying capacity should bed clearly spelled out in the Final EIS, as well as what constitutes "excess numbers" which would trigger removal operations.

Hazardous Materials, Hazardous Waste, Contamination

22 *Contamination to air, water, and land from munitions constituents* – The Draft EIS has failed to
11.2 adequately address the potential for contamination to air, water and land from munitions. As one example, it is commonly known that range operation could contaminate soils from chemicals (for example, spilled fuels), explosives, residues or unexploded ordnance. Indirect effects on soils include reduced surface water infiltration with an associated increase in surface water runoff, soil productivity decline resulting in poor plant growth or seed germination, and soil contamination migration. Both direct and indirect effects on soils would occur as a result of continued military surface-disturbing activities. For another example, the Draft EIS fails to acknowledge the potential for anthropogenic activities at the range to contaminate groundwater by inadvertent spills of chemicals or explosives.

23 *Spill prevention and response action plan to protect water quality from spills* – Where is this significant
11.3 issue (raised during scoping) addressed in the EIS? Your EIS has little or no discussion on mitigation (i.e. best management practices) to deal with spill prevention and response.

24 *Impacts resulting from hazardous materials corrective action obligations* – The EIS must be more
11.4 forthcoming with these significant impacts associated with the action alternatives. You must quantify them in terms of scope, magnitude, duration and intensity. You must identify potential mitigation and costs of such. Your conclusion that "standard procedures would be used in their handling and disposal; therefore, no significant impacts would be anticipated" is totally unsubstantiated.

25 *Consideration for a plan for the clean-up and reclamation of the project site for future nonmilitary use* –
11.5 Only in section 4.1 have you acknowledged the need for an Installation closure and remediation plan for hazardous materials in association with non-renewal of the land withdrawal. No specifics or costs are identified. Reclamation has not been mentioned or addressed in the Draft EIS. This is a serious oversight.

Socioeconomics

26 *Socioeconomic effects of NAWSCL* – You provide no substantive analysis with quantification of these
8.2 impacts. The beneficial impacts of continued withdrawal renewal must be identified and quantified. In addition, the "significant and adverse" impacts of the No Action Alternative must similarly be put into perspective with analysis and quantification.

27 *Cost of continuing the proposed withdrawal* – This issue raised by the public during scoping has not been
8.3 acknowledged, mentioned, addressed or analyzed in the EIS.

CHINALAKE PUBLICCOMMENTS/018

Document 12

Circulation and Traffic

28 / 12.1 *Impacts on local streets in Ridgecrest, and subsequent mitigation* – The EIS states that "continuation of nonmilitary uses (as well as recreation, research, education) is not anticipated to result in significant impacts to transportation and circulation." Where in the EIS do you address and fully analyze the impacts of military activities on circulation and traffic?

29 / 12.2 *Desire to see the road between the ranges remain open for public use* – The EIS has not addressed the topic on improved or increasing public access by opening roads, even on a temporary or intermittent nature. The EIS must address those significant issues raised by the public during scoping.

Noise

30 / 2.30 *Identification of areas of frequent noise complaints* – Provide a map and table in the EIS which shows the areas and times associated with frequent noise complaints.

31 / 2.31 *Concerns with the 2011 AICUZ* – The EIS states that "the compatibility of NAWSCL activities with off-installation land use is addressed in the Update of the AICUZ Report (U.S. Navy 2011f)." While the pattern of such flights would remain consistent, tempo may increase. Future noise contours must be mapped and incorporated directly into the EIS for each alternative. Section 3.2 of the EIS lays out the "recommendations" from the 2011 AICUZ Update. The Department of the Navy should identify which of these recommendations will be adopted. With such transparency, the DoN would be able to provide more meaningful impact analysis in its EIS for the withdrawal renewal. Further, both the AICUZ and the CLUMP are referenced profusely in the EIS. Both documents should be uploaded directly to your project website so that they may be able to be easily accessed and referenced by the public.

32 / 13.1

Air Quality

33 / 3.4 *Potential air quality impacts* – It is not substantiated to conclude that air quality impacts would not increase over the baseline. It seems likely that increased tempo of military activity could lead to an increase.

Airspace

34 / 10.38 *Impacts on general aviation airspace navigation* – An increased need for general aviation airspace has not been acknowledged. To conclude that there would be no significant change from the baseline is unsubstantiated as the EIS does not address closures and restrictions on a regional basis, as well as the increasing need of general aviation. One example is the proposed closure or restriction of additional airspace in the vicinity of Barstow and Twentynine Palms as a result of USMC base expansion there. This should be specifically addressed as a cumulative impact.

35 / 10.39 *Rerouting of general aviation air traffic that could result in environmental impacts from consumption of extra fuel, more carbon and combustion products, and noise* – This issue raised by the public during scoping has not been acknowledged, mentioned, addressed or analyzed in the EIS.

Cumulative Impacts

36 / 15.16 *Desire to see cumulative and indirect impacts analyzed for each fully analyzed alternative* – Indirect impacts are only minimally analyzed in each resource section. The discussion of cumulative impacts is also very weak and incomplete.

37 / 15.17 *Cumulative impacts of the withdrawal of public lands for DoD installations throughout So. California* – This significant concern raised by the public during scoping has been ignored in the EIS. Military withdrawal of public lands within the region must be acknowledged and fully analyzed in the EIS. One example is the proposed closure or restriction of additional public land and airspace in the vicinity of Barstow and Twentynine Palms as a result of USMC base expansion there. This should be specifically addressed as a cumulative impact. There is also no mention of the proposed renewal/expansion of the facility at Chocolate Mountains Aerial Gunnery Range.

38 / 15.16 *Concerns about cumulative impacts and desire for analysis to be integrated with the discussions of resource impacts instead of in a separate chapter* - Indirect impacts are only minimally analyzed in each resource section. The discussion of cumulative impacts is also very weak and incomplete.

Other

39 / 15.18 *Desire for documentation of current stewardship practices, all resource monitoring, and reporting during current land withdrawal* – There is only a very cursory mention of monitoring in the Draft EIS. Few specifics are provided other than to acknowledge that monitoring and reporting are required. No indication of costs has been provided. A complete multi-resource monitoring plan should be developed and provided as an appendix to the Final EIS.

40 / 15.19 *Consideration for a joint NEPA/California Environmental Quality Act (CEQA) document* - This issue raised by the public during scoping has not been acknowledged, mentioned, addressed or analyzed in the EIS.

41 / 13.1 *Desire for additional and ongoing community outreach to communities* – AICUZ outreach efforts are not clearly spelled out. The Final EIS should have the AICUZ and CLUMP as appendices. Or, as an alternative, please upload these two oft-referenced documents directly to the withdrawal project's website for easy public access.

42 / 15.20 *Consideration for BLM to have a lead role in the LEIS process* – The Final EIS should include an appendix with the 1994 Memorandum of Agreement between the Secretary of the Navy and the Bureau of Land Management (BLM). Despite the public raising this important issue during scoping, the EIS has not addressed the rationale for BLM not assuming the lead role on this current military land withdrawal EIS. The Final EIS must also address the nature and extent of BLM's future role if the withdrawal is renewed. For example, will the 1994 Memo of Agreement be updated? Will a revision or amendment be needed to the CDPA or other Resource Management Plan? Will the BLM be charged with any other management responsibilities? What will the cost be of such measures? Finally, to facilitate our Nation's

43 / 15.21 need for energy independence, the Final EIS determine if any of the1 03 Million acres proposed for continued withdrawal can be opened to any surface entry, geothermal, mining, mineral leasing, or Materials Act of 1947.

Thank you for addressing these comments in the Final EIS.

Sincerely,

Julia Clark

Julia Clark

Document 13

RICHARD CERVANTES
Supervisor 5th District
P. O. Box 749
Lone Pine, CA 93545

Lone Pine Office (760) 876-4719
FAX (760) 876-9286
Independence (760) 878-0373

COUNTY OF INYO
BOARD OF SUPERVISORS

September 12, 2012

NAWS China Lake Land Withdrawal
LEIS Project Manager Mr. Gene Beale
Naval facilities Engineering Command Southwest
1220 Pacific Highway
San Diego, CA 92132-5178

SUBJECT: Comment on the Draft EIS/LEIS for Renewal of Naval Air Weapons Station China Lake Public Land Withdrawal.

Ladies and Gentlemen:

1 / 8.1 I fully support the renewal of the Naval Air Weapons Stations China Lake Public Land Withdrawal. The NAWS is important to Inyo County and its Fifth District. Naval operations provide employment for many of our residents and enhance the County's economy, while helping to maintain our national defenses.

I want to thank the members of our military, most especially those serving at the Naval Weapons Station, for their service and once again support the continued operations at the Naval Air Weapons Station at China Lake.

Sincerely,

Richard Cervantes

Richard Cervantes

Document 14

United States Department of the Interior
OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Pacific Southwest Region
333 Bush Street, Suite 515
San Francisco, CA 94104

ER 12/976

Filed Electronically

08 November 2012

Gene Beale
Naval Facilities Engineering Command, Southwest
1220 Pacific Highway
San Diego, CA 92132

Subject: Review of the Draft Environmental Impact Statement/Legislative Environmental Impact Statement (DEIS/LEIS) for Renewal of Naval Air Weapons Station China Lake Public Land Withdrawal, Kern, Inyo, and San Bernardino Counties, CA

Dear Mr. Beale:

The Department of the Interior has received and reviewed the subject document and has no comments to offer.

Thank you for the opportunity to review this project.

Sincerely,

Patricia Sanderson Port

Patricia Sanderson Port
Regional Environmental Officer

cc:
Director, OEPC
OEPC Staff Contact: Loretta B. Sutton

CHINALAKE PUBLICCOMMENTS/019

Document 14A

United States Department of the Interior
OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Pacific Southwest Region
333 Bush Street, Suite 515
San Francisco, CA 94104

[redacted]

Filed Electronically

11 February 2013

Gene Beale, Project Manager
Naval Facilities Engineering Command, Southwest
1220 Pacific Highway
San Diego, CA, 92132

Subject: Reopening of Public Comment Period and Additional Information for the Draft Environmental Impact Statement/Legislative Environmental Impact Statement (DEIS/LEIS) for Renewal of Naval Air Weapons Station China Lake Public Land Withdrawal, Kern, Inyo, and San Bernardino Counties, CA.

Dear Mr. Beale:

The Department of the Interior has received and reviewed the subject document and has no comments to offer.

Thank you for the opportunity to review this project.

Sincerely,

Patricia Sanderson Port

Patricia Sanderson Port
Regional Environmental Officer

cc:
Director, OEPC
OEPC Staff Contact: Loretta B. Sutton

Document 15

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

November 8, 2012

Gene Beale
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, California 92132

Subject: Draft Environmental Impact Statement/Legislative Environmental Impact Statement (DLEIS) for the Renewal of Naval Air Weapons Station China Lake Public Land Withdrawal, Kern, Inyo and San Bernardino Counties California, August 2012, (CEQ # 20120258)

The U. S. Environmental Protection Agency is providing comments on the subject document, in accordance with our responsibilities under Section 309 of the Clean Air Act and the National Environmental Policy Act (NEPA). We acknowledge the importance of research, development, acquisition, test and evaluation of weapons and armaments at the Naval Air Weapons Station China Lake (NAWSCL). The land withdrawal would allow NAWSCL to continue this essential mission for the next 25 years.

The DLEIS acknowledges the significant noise impacts of the proposed alterative. It would expose an additional 695 off-installation residents to noise levels between 65 and 69 decibel (A-weighted, dBA) Community Noise Equivalent Level (CNEL) (from 3,970 to 4,665 individuals) and an additional 280 residents to noise levels between 70 and74 dBA CNEL (1,050 to 1,330 individuals). As the Naval Facilities Engineering Command has noted in *Guidelines for Sound Insulation of Residences Exposed to Aircraft Operations*, residential use is discouraged in 65 to 69 dBA DNL and strongly discouraged from 70 to 75 dBA DNL.

1 **2.32** The DLEIS includes NAWSCL's current mitigation measures to reduce noise impacts from Armitage Airfield. Because these measures are already in place, we consider these to be existing procedures. Since the DLEIS does not include new mitigation measures for noise in the proposed alternative, we recommend that discussion be included in the Final LEIS per NEPA requirement to discuss mitigation (40 CFR 1502.16(h)).

We have rated the LEIS as Environmental Concerns – Insufficient Information (EC-2) (see enclosed "Summary of Rating Definitions"), based on our concerns about acoustic impacts, range assessment, water resources, and threatened and endangered species. Please see the enclosed detailed comments for more information about these concerns.

EPA appreciates the opportunity to review this DLEIS. When the Final LEIS is released for public review, please send one copy to the address above (mail code: CED-2). If you have any

Document 15

questions, please contact me at (415) 972-3521 or Tom Kelly, the lead reviewer for this project, at 415-972-3856 or kelly.thomasp@epa.gov.

Sincerely,

for Connell Dunning

Kathleen Martyn Goforth, Manager
Environmental Review Office (CED-2)

Enclosures: Summary of EPA Rating Definitions
Detailed Comments

cc: Captain Dennis Lazar, Naval Air Weapons Station China Lake
Ray Brunsfield, U.S. Fish and Wildlife Service
Matthew Alexander, City of Ridgecrest
Rob Dmohowski, Kern County

Document 15

US EPA DETAILED COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT/ LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT (DLEIS) FOR THE RENEWAL FOR THE OF NAVAL AIR WEAPONS STATION CHINA LAKE PUBLIC LAND WITHDRAWAL, KERN, INYO AND SAN BERNARDINO COUNTIES CALIFORNIA, NOVEMBER 8, 2012

Acoustic Impacts

The DLEIS acknowledges the significant noise impacts of the proposed alternative. It would increase the number of (off-installation) residents exposed to noise from 65 to 69 decibel (A-weighted, dBA) Community Noise Equivalent Level (CNEL) from 3,970 to 4,665 and 70-74 dBA CNEL from 1,050 to 1330[1]. As the Naval Facilities Engineering Command has noted[2], residential use is discouraged between 65 to 69 dBA DNL and strongly discouraged from 70 to 75 dBA DNL. Even though the proposed alternative increases the number of people living within the 65 to 69 dBA CNEL, the areal extent of that off-site contour is reduced by nearly 11% (1,017 acres), while the 70 to 74 dBA CNEL contour expands by more than 24% (721 acres, Table 4.2-2). The cost to achieve the Navy's recommended 25 dBA to 35 dBA noise level reduction (for homes between 65 to 74 dBA DNL) ranges from $10,000 to $50,000 per home[3].

2 **2.32** CEQ regulations require a discussion of mitigation for adverse environmental impacts (40 CFR 1502.16(h)) even when the impacts are not considered significant[4]. The DLEIS identifies existing mitigation measures in Section 3.2 but proposes no new mitigation for the project's significant impact (p. 4.2-5). Because noise is a significant impact of the proposed alternative, the Navy should thoroughly consider possible mitigation measures.

3 **14.5** The DLEIS did not consider the possibility of upgrading one of the three South Range airfields to accommodate a portion of the operations at Armitage Air Field. If paving and lengthening a South Parcel air field to accommodate some aircraft operations (thereby reducing noise impacts to the community near Armitage Airfield) is feasible, EPA recommends including a discussion of this as an option for operational flexibility for NAWSCL.

EPA recommends additional noise monitoring to assure the accuracy of noise modeling, if it has not been a part of previous noise studies. The noise data in the DLEIS is based on the 2011 Air Installations Compatible Use Zones (AICUZ) Study for NAWSCL, which noted an expansion beyond the contours of the 2007 AICUZ Study. The 2011 AICUZ Study expanded the off-site 65-69 dBA CNEL area by a factor of six (1,292 to 8,417 acres) and the 70 – 74 dBA CNEL area by nearly a factor of 10 (31 to 3151 acres)[5]. According to the 2011 AICUZ study, the increase is primarily due to the inclusion of aircraft missions in the

[1] Noted from comparisons of Table 3.2-4 and 4.2-1.
[2] Guidelines for Sound Insulation of Residences Exposed to Aircraft Operations, prepared for Naval Facilities Engineering Command, April 2005
[3] Page 5-1, Guidelines for Sound Insulation of Residences Exposed to Aircraft Operations, prepared for Naval Facilities Engineering Command, April 2005
[4] Question 19a, NEPA's 40 Most Asked Questions, Council on Environmental Quality
[5] Comparison of Table 5-4 and 5-3 in the Final Air Installations Compatible Use Zones (AICUZ) Study, Naval Air Weapons Station China Lake, California April 2011.

CHINALAKE PUBLICCOMMENTS/020

Baker range, and changing the ground impedance of the desert terrain from acoustically soft to acoustically hard[6]. Given the location of the Baker Range and the flight paths for the Armitage Airfield, it appears that the change in model parameters is a primary reason that the noise contours expanded off-site south of NAWSCL. The DLEIS and 2011 AICUZ do not mention whether NAWSCL has ever conducted noise monitoring to verify the accuracy of the ground impedance and other model inputs.

4 2.32 *Recommendations:*
The FEIS should discuss specific mitigation measures of significant adverse noise impacts of the proposed alternative.

5 14.5 The FEIS should discuss the possibility of upgrading one of the South Range airfields to partially reduce operations, and associated noise impacts, at Armitage Air Field.

6 2.28 The FEIS should also discuss noise monitoring to verify the accuracy of modeled noise impacts, or commit to monitor noise levels at NAWSCL perimeter near Armitage Airfield.

Contaminant Migration

An important environmental consideration in the decision to continue operations (approve the land withdrawal) at Naval Air Weapons Station China Lake is whether contamination may migrate within or away from the range. The DLEIS provides many reasons contaminant off-site migration from current operations is unlikely, such as: 80% of ordinance used at NAWSCL is inert (p. 3.1-13); high explosive ordinance is primarily used at the Airport Lake target area, which does not drain off-site (3.1-13); ordinance is not used within 1 mile of riparian areas (p. 4.7-1, also see discussion of Water Resources below); hydraulic barriers (clay soils) are located between the ground surface and groundwater in the Indian Wells Valley aquifer underlying much of the North Range (p. 4.7-2); and a study at the Yuma Proving Ground[7] showed limited migration of ordinance residue at a site with a similar mission and climate (4.7-2).

While these factors may indicate that surface water and groundwater contamination are unlikely, we note that Department of Defense Instruction 4715.14 of 2005 requires an assessment of operational ranges. In response, the Navy created the Range Sustainability Environmental Program Assessment. This assessment "[i]dentifies and assesses potential for off-range migration at land-based ranges."[8] The DLEIS does not provide any indication that an assessment has been completed or is planned for NAWSCL.

7 7.9

[6] See p. iii, Final Air Installations Compatible Use Zones (AICUZ) Study, Naval Air Weapons Station China Lake, California April 2011.
[7] U.S. Army. 1999. *Human/Ecological Health Risk and Migration Assessment of a Conventional Munitions Test Range YPG -KOFA Range*, Yuma, AZ, September.

[8] Navy presentation on the Range Sustainability Environmental Program Assessment to the Environmental Council of States on February 10, 2006.

8 7.9 *Recommendation:*
The FEIS should summarize a completed range assessment for NAWSCL and its conclusions about contamination of surface soils, groundwater and surface water, or discuss the Navy's schedule to conduct a range assessment.

Range Clearance

With respect to range clearance, the DLEIS does not sharply define the differences between the alternatives. (40 CFR 1502.14). The DLEIS provides detailed information on ordinance use for the proposed alternative compared to the Baseline and No Action Alternatives (p. 2-49 and 2-50 for example). The discussion of range clearance, however, is much less explicit. The discussion of range ground effects for both the proposed alternative and Baseline Alternative state, NAWSCL "would continue its policy of clearing UXO [unexploded ordiance] and removing MPPEH [material potentially presenting an explosive hazard] from the ranges after tests are conducted as conditions allow" and emphasizes compliance with ESQD regulations (4.10-3 and p. 4.10-8). The same discussion is used to describe range clearance for both the proposed alternative and the baseline alternative.

The FEIS should clarify if the 25% increase in the use of ranges at NAWSCL, under the proposed alternative, will be accompanied by a corresponding increase in removal of UXO and MPPEH. For one location, the DEIS appears to state that current resources are insufficient to keep pace with training and testing: "[a]n EOD crew periodically clears ordinance items from Superior Valley and other South Range sites as time and budgets permit" (p. 3.10-19).

Page 3.10-19 also contains discussion of ordinance use that is unclear for some responsibilities. It states that tenant organizations are responsible for clearing MPPEH following individual training and testing. This would seem to imply that training and testing is not complete until MPPEH has been cleared, but that point is not explicitly stated. The DLEIS also states that Range Operations and Ordinance Tests and Evaluation personnel also clear MPPEH, without clarifying whether these personnel are assigned to each tenant. While stating that MPPEH is routinely cleared after training and testing, the DLEIS also states that UXO may remain. Further, UXO, once rendered safe, is then considered MPPEH. The DEIS clarified that Explosive Ordinance Disposal (EOD)/UXO crews have primary responsibility for UXO clearance but does not clarify responsibility for the resulting MPPEH.

9 10.32 *Recommendations:*
The FEIS should specify or estimate the frequency of clearance activities for both UXO and MPPEH for the proposed and baseline alternatives.

10 10.33 The FEIS should also describe impacts of delayed clearance, if appropriate.

Water Resources

The NAWSCL's 2005 Comprehensive Land Use Management Plan (CLUMP) included an objective to continue to inventory, protect and enhance seeps and other water sources. This objective has also been incorporated into the 2012 Draft CLUMP (Appendix D, p. 3-17). Wildlife and habitats at NAWSCL are described by the DLEIS as rich and varied (p. 3.4-8). Due to the scarcity of water, the seeps concentrate wildlife, creating an oasis effect (p. 3.4-12). While we are pleased to learn that ordinance is not used within one mile of (seep fed) riparian areas (p. 4.7-1), we question the accuracy of this statement in light of the incomplete seep inventory.

11 7.10 *Recommendations:*
The FEIS should include a schedule for completing an inventory of seeps at NAWSCL. The FEIS should also clarify the portions of the facility that have been surveyed (e.g. areas within one mile of current and former target areas have been surveyed).

Threatened and Endangered Species

Wildland Brush Fires

Section 3.4.10 of the DLEIS explains that fire is a major risk to critical habitat for the desert tortoise in the Superior Valley. Hot spot charges are a necessary safety precaution and aids in the location and recovery of spent ordinance; however, hot spotting charges may result in brush fires. Four hundred acres of critical desert tortoise habitat to burn were burned in 2011 and 1090 acres have been burned since 1998 (p. 4.4-8). Fires can result in direct tortoise mortality and allow the establishment of non-native grasses rather than native vegetation needed for food by the desert tortoise.

Appendix C, Draft CLUMP, notes that NAWSCL have relocated fire personnel and equipment out of Superior Valley (p. 3-16). NAWSCL increased training by 25% in 2004[9], and is proposing to further increase training another 25%. This increase in training also carries a corresponding increase fire risk. The DLEIS discusses measures to mitigate the fire risk, including the current fire management policy and a fire management plan currently in development; however, the element of the plan and policy -- clearing targets and establishing fire breaks (p. 3.4-28 and 29) -- were also discussed in the 2004 EIS. We suggest that additional fire protection measures would be appropriate to address the 56% increase in training (25% in 2004 and the 25% in the proposed alternative).

12 4.8 *Recommendations:*
The FEIS should include a year-by-year estimate for acres of critical habitat burned and an accompanying discussion of facility operational changes that may have impacted the fires (e.g. increased operations, relocation of fire fighting personnel

[9] Record of Decision Proposed Military Operational Increases and Implementation of Associated Land Use and Integrated Natural Resources Management Plans. Naval Air Weapons Station China Lake California, (69 FR 29931) May 26, 2004.

13 4.22 etc). In consultation with the U.S. Fish and Wildlife Service, the Navy should consider additional mitigation measures to reduce the increased fire risk to critical habitat in the Superior Valley (e.g. temporarily moving fire fighting personnel and equipment into Superior Valley or South Range, contracting for fire spotting services, altering operations during high fire danger etc.)

Species Status

The NAWSCL has consulted with the U.S. Fish and Wildlife Service and received Biological Opinions for three species: the endangered Mojave tui chub; the threatened desert tortoise and the threatened Inyo California towhee (3.4-3). NAWSCL has also entered into a Cooperative Management Agreement with Fish and Wildlife Service on a potential de-listing of the Inyo California towhee (p. 3.4-3). The DLEIS discusses habitat enhancement such as deepening and widening the Lark Seep south channel and fencing springs and riparian areas for protection from burro and horse grazing. The DLEIS also discusses mitigation measures to reduce impacts to critical habitat, such as the fire management policy (and fire management plan currently in development p. 3.4-28). While the DLEIS explains measures to protect and enhance threatened and endangered species, it does not provide an overall assessment of the effectiveness of these measures.

The DLEIS includes figures showing population densities for desert tortoise, but does not clarify whether the population has grown, declined or remained stable (3.4-4 and 3.4-5). NAWSCL reports take and mortality of desert tortoise annually to the Fish and Wildlife Service. The DLEIS mentions that that tortoise take "has been primarily a result of motor vehicles striking tortoises on established roadways," but does not provide take on an annual basis, allowing an assessment of current mitigation measures.

The Mojave tui chub habitat is limited to the Lark and G-1 Seep (Table 3.4-2). We would expect that NAWSCL has conducted many chub counts or surveys, but the DLEIS does not include current population and its historic trends. Similarly, surveys of the Inyo California towhee over time would provide information on the effectiveness of facility's protection and enhancement measures and the impact of its operations.

14 4.9 *Recommendations:*
The FEIS should include historic and current population estimates for threatened and endangered species at NAWSCL. The FEIS should also report take, mortality and harassment, of endangered species by year.

CHINALAKE PUBLICCOMMENTS/021

Document 15

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

"Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment.

Document 16

Posted by: Kathleen Goss (kgoss@qnet.com) **on** Nov 08, 2012 / 1:00PM

1 "1. Under Section 3.1.7, "On-Installation Nonmilitary Land Uses," please acknowledge that the Darwin Community Services District (DCSD) has rights to access its historical water source, Coso Cold Springs, which is within NAWSCL boundaries. Recently, a 5-year easement was approved by NAWSCL for DCSD access. DCSD is recommending an easement for the full 25 year period of the CLUMP to access the Spring such that routine and emergency maintenance can be performed at the Spring, on the pipeline that runs through NAWSCL, and on the unpaved access roads, when needed.

1.1

2 2. The community of Darwin lies very close to the northern boundary of NAWSCL. In recent years we have enjoyed a congenial relationship with the Base, and hope this will continue in the future. Because traffic going to the Base must pass directly through the populated area of Darwin, we appreciate all vehicles observing a speed limit of 10 mph within town limits, to minimize the impact of dust and noise. Construction work on the North Ranges several years ago, with the associated heavy truck traffic, resulted in severe damage to the Darwin Road, which had to be repaired at the expense of Inyo County. We hope that any future heavy traffic of this nature will be cleared with the proper County authorities, and appropriate provisions be made to remediate any resulting damage. We also request coordination with Darwin residents to minimize impact on the residential area.

12.3

3 3. Section 3.4.9 spells out management goals (AML)for wild horses, but not for burros. What is the AML for burros, and do management objectives differ from those for horses?

4.20

4 4. There has been a significant increase in lighting on the North Ranges in recent years. Some of these lights seem to be aimed directly at Darwin. While this is probably not really the case, please consider directing bright lights downward or otherwise shielding them, when practical, to preserve the integrity of the night sky, which is unsurpassed in the Darwin area.

1.19

Document 17

Posted by: Bob Greenfield (red_flag411@yahoo.com) **on** Oct 27, 2012 / 1:40PM

1 "My comment from the Scoping Meeting last year, where I had requested the associated supporting documents to the EIS be made public before release, was ignored and no documents were ever provided to the public. I received only a form letter. The organization I represent cannot review this document without those various plans and reports having first been provided to the public.

13.1

2 The draft EIS is unreviewable as provided. The land use plan that is supposed to be updated and as is in the appendix is not complete and contradicts much of the EIS. Old out of date documents (such as the natural

13.7

3 resources management plan) are referenced and no new updated supporting plans, or any land and resources management plans for that matter, were ever made public for this review. Therefore, the Navy has not met its obligations under NEPA for public disclosure, so this EIS is out of compliance with federal laws.

13.2

Either the Navy is simply incompetent when it comes to meeting NEPA regulations, or the Navy is purposefully ignoring the requirements and hiding documents from the public. EIS public review process should not be like a FOIA process. Redo this public review process, and provide the requisite required documents for public inspection before you re-release a newer and updated version of the draft EIS for pubic review.

"

Document 18

4505 Maryland Parkway
RAJ 280 Box 452040
Las Vegas, Nevada 89154-2040

Naval Facilities Engineering Command, Southwest Desert IPT
ATTN: Gene Beale, Planner
1220 Pacific Highway
San Diego, CA 92132-519

To whom it may concern:

Despite your best intentions to get the China Lake Project EIS in compliance with CEQ implementation regulations for NEPA (40 CFR 1500-1508), you have failed. The following are my comments, along with relevant references to the CEQ regulations that you have failed to comply with:

Cover Sheet:

1 • You have not identified the cooperating agency BLM assisting with this project §1502.11 (a)
• CEQ requires a one-paragraph abstract §1502.11 (c)
• You have not identified when comments must be received §1502.11 (f)
• Regarding agency-specific requirements, you have not provided a proper reference to the Department of Navy Order for this installation. Include that item in your references cited.

15.13

Summary:

2 • CEQ requires it to be less than 15 pages §1502.12
• You have failed to stress major conclusions §1502.12
• You fail to stress areas of controversy §1502.12
•You fail to stress issues raised by agencies, by the public and those to be resolved §1502.12

15.14

Table of Contents:

• This section appears adequate and in compliance with CEQ regulations.

3 **Purpose and Need:**

15.15 • You have failed to relate the Purpose & Need to alternatives including the proposed action §1502.13

Proposed Action and Alternatives:

4 • You have failed to base this section on information/analysis in sections on Affected Environment and

14.7 Environmental Consequences §1502.14

5 • You have failed to rigorously explore all reasonable alternatives §1502.14 (a). Renewal of a reduced

14.8 amount (perhaps 50% of the 1.03 Million Acres should be studied).

6 • You have failed to objectively evaluate all reasonable alternatives §1502.14 (a). Analyze alternatives for

14.8 25, 50 and 75% of the existing 1.03 Million Acres proposed for renewed withdrawal. Some public lands should be considered for return to the public trust and access.

7 • You haven't adequately stated why certain alternatives were eliminated from detailed study §1502.14

14.9 (a). For example, reasoning is not provided for not studying an integrated training area with the Army or USMC is inadequate.

8 • You have failed to include reasonable alternatives not within the jurisdiction of the agency §1502.14 (c).

14.8 The examples above are just a few that you need to study.

9 • You have not included mitigation measures in this section not described elsewhere §1502.14 (f)

14.10

Affected Environment:

CHINALAKE PUBLIC/COMMENTS/022

Document 18

10 • It is unclear how many total pages are in this chapter, but it is not "succinct description" as required by CEQ regulation §1502.15
• This chapter should be "no longer than necessary to understand the effects of alternatives" §1502.15. In sections where you conclude No Impacts or Less than Significant Impacts, you should make those Affected Environment sections much more succinct.
• These sections are to be "commensurate with importance of impacts" §1502.15. In sections where you
4.12 conclude No Impacts or Less than Significant Impacts, you should make those Affected Environment sections much more succinct.
• Your DEIS is inadequate because you have not attempted to "summarize, consolidate, or reference less important material" in accord with CEQ reg §1502.15
• Your DEIS is inadequate because you have not attempted to "concentrate effort and attention on the important issues" per CEQ reg §1502.15

Environmental Consequences:

11 • This section is meant to be the scientific and analytic basis for comparison of alternatives §1502.16. You have failed to show the adverse effects which cannot be avoided 102(2)(C) i.
• While some direct effects are show, you have not provided thresholds (in terms of quantification, scope, magnitude, duration, intensity) to clearly show their significance with substantiated conclusions § 1502.16 (a).
• You have failed to indicate indirect effects and significance § 1502.16 (b).
• You fail to show conflicts with various laws, other plans and policies § 1502.16 (c)
• You need to analyze and quantify the energy requirements and conservation potentials of alternatives and mitigation measures. It is required by CEQ regulation § 1502.16(e)
• You fail to indicate the natural or depletable resource requirements and conservation potentials of alternatives and mitigation measures § 1502.16 (f)
4.13 • You are required to show the urban quality, historic and cultural resources, and design of the built environment, including reuse and conservation potential of alternatives and mitigation measures § 1502.16 (g)
• You have failed to show adequate mitigation measures § 1502.16 (h). What are your plans for land purchase, signing, boundary marking, law enforcement support, public outreach, planning, coordination, a public committee to provide oversight in the restricted area?
• Your section on cumulative impacts is not complete § 1508.7. There are many additional projects that have not been included. The Final EIS should list foregone opportunities as a result of the military land withdrawal. For example, see the latest list of wind, solar, geothermal projects maintained by BLM.
• The EIS should use conditional language (e.g. "Would" instead of "Will") when describing the proposed action, alternatives, impacts and the future. For example your "Environmental Consequences" section has many instances of the word "will" when it should be "would" in the majority of cases, especially in reference to impacts. This use of "will" instead of "would" is very prevalent in the geology, transportation, airspace and biology sections of chapter 4.

Appendix:

12 • These are meant to be material prepared specifically for EIS § 1502.18, and which substantiate fundamental analyses § 1502.18. Appendices are supposed to be analytic and relevant to decision § 1502.18. One appendix isn't even needed as the information is already within the body of the EIS.
• There is no narrative explanation of what the information in Appendixes D, G and H mean. It is meaningless to just include a bunch of tables, graphs and maps without adequate explanation of them.
• A few of the Appendixes don't include a bibliography or references cited.
13.53 • Appendixes are complex and voluminous. Are they really needed or can you just reference the data in another location?

Document 18

Other CEQ Requirements:

13 • You must show to who the draft EIS was sent § 1502.19
• EISs are normally less than 150 pages (300 pages for proposals of unusual scope or complexity) § 1502.7. Your DEIS is much longer and clearly not in compliance with CEQ regulations.
• Your preparers list doesn't include a few military disciplines appropriate to scope and issues identified in scoping process § 1502.6. For example, who wrote the purpose and need? A better write-up is needed for the training section and need for the action?
• The DEIS was not "written in plain language" § 1502.8. It is full of military jargon, acronyms and more.
• I liked some of the graphics for clarity, but many are cluttered and confusing § 1502.8. Some of the maps and graphics are poor and hard to decipher.
• You are supposed to "include incomplete information essential to making a reasoned choice among alternatives § 1502.22(a)." You have failed to identify where the information is incomplete, along with where "relevant information is missing." § 1502.22(b)
• Where information is incomplete or mission, you must state that it is unavailable, its relevance, and summarize existing credible info.
• In some cases, you have failed to evaluate impacts based on generally accepted data or methods. An example is that you have failed to quantify how much energy production and recreation use could occur on that public land if the withdrawal was not renewed.
15.22 • You must cut down on bulk by incorporating material by reference when possible § 1502.21
• You must avoid repetitive discussions by identifying other statements it is tiered to § 1502.20
• Your EIS is not analytic. CEQ regulations requires you to be "not encyclopedic" § 1502.2(a)
• You must discuss impacts in proportion to their significance § 1502.2(b). You have pages and pages of information on air quality but then conclude "less than significant" impacts (except for Alternative 3). The geological resources sections should also be drastically cut back if all impacts for all alternatives are truly "less than significant." However, that may not be the case because you have failed to adequately address fault lines, earthquakes, ground movement and vibrations.
• You must assess impacts of USMC rather than justifying decisions already made § 1502.2(g). Much of your document appears to attempt to justify your "preferred" alternative, rather than look harder at alternatives that would meet the Navy's mission with a reduced amount of land (25, 50 or 75 percent of the existing 1.03 Million Acres withdrawn).
• You have not conducted or included cost-benefit analysis incorporated it by reference § 1502.23
• You have failed to identify and reference all the methodologies and scientific sources used § 1502.24
• You must document the finding and conclusions of all required surveys and reports prepared concurrently § 1502.25(a). These are to comply with the Fish and Wildlife Coordination Act, National Historic Preservation Act, Endangered Species Act, and other laws and executive orders lists all Federal permits, licenses, and other entitlements needed § 1502.25(b). For example what are the results of the Biological Assessment, Biological Opinion, cultural resource surveys and consultation with the SHPO?

Other Comments:

14 • You have failed to comply with Executive Orders 11990, 11988, 12898, 13007
15.23 • Because of the bulk of the EIS, you must provide a Glossary and an Index.
• You must consistently provide metric measurements (with English units in parens)
15/6.3 • Issues related to seismicity must be sufficiently characterized, quantified and analyzed.
16/3.5 • The air quality section fails to evaluate whether the action and alternatives would be subject to New Source Performance Standards.
17/3.6 • The air quality section fails to evaluate whether the action and alternatives would be subject to National Emissions Standards for Hazardous Air Pollutants.
18/4.20 • You must show the results and conclusions of consultation with the US Fish and Wildlife Service.
19/4.21 • The EIS must analyze the impacts of the action on biodiversity of the affected ecosystem, including genetic diversity and specifics diversity.

Document 18

20/15.24 • The EIS must quantify the habitat types and provide estimates by type for the amount of habitat lost or adversely affected.
21/15.25 • The EIS must consider and show the measures to protect, restore and enhance wildlife habitat.
22/10.37 • The EIS must consider a reasonable spectrum of potential accident scenarios that could occur over the life of the proposed action, including the maximum reasonably foreseeable accident. This is especially important within all areas to be shared with the public, as well as for transportation accidents.

I look forward to seeing how you address all my comments in the Final EIS.

Yours truly,
James Howell

Document 19

BOARD OF SUPERVISORS
COUNTY OF INYO

P. O. BOX N • INDEPENDENCE, CALIFORNIA 93526
TELEPHONE (760) 878-0373 • FAX (760) 878-2241
e-mail: pgunsolley@inyocounty.us

MEMBERS OF THE BOARD
LINDA ARCULARIUS
SUSAN CASH
RICK PUCCI
MARTY FORTNEY
RICHARD CERVANTES

KEVIN D. CARUNCHIO
Clerk of the Board

PATRICIA GUNSOLLEY
Assistant Clerk of the Board

October 30, 2012

Mr. Gene Beale
Naval Facilities Southwest Desert IPT
1220 Pacific Highway
San Diego, CA 92132

Re: Naval Air Weapons Station China Lake (NAWSCL) Land Withdrawal Draft Environmental Impact Statement/Legislative Environmental Impact Statement (EIS/LEIS)

Dear Mr. Beale:

On behalf of the Inyo County Board of Supervisors, we appreciate the opportunity to comment on the Naval Air Weapons Station China Lake (NAWSCL) Land Withdrawal Draft Environmental Impact Statement/Legislative Environmental Impact Statement (EIS/LEIS). Inyo County has a strong history of supporting the military, and has always been proud to be home to portions of the China Lake installation.

The Proposed Project outlined in the EIS/LEIS notes that, in addition to renewing the land withdrawal of NAWSCL lands for 25 years, various activities at the China Lake installation will be increased by up to 25%, to include overflights, ordinance use, and various types of training and research. However, the EIS/LEIS notes that such increases will take place within the existing boundaries of the installation and, as such, no significant off-installation impacts will result – including socioeconomic impacts to the County, changes in land use, and increases in noise levels.

1 In our comment letter of August 9, 2011, the Board noted that the EIS/LEIS specifically address the fact that overflights
1.13 from the NAWSCL limit the potential development of some lands within Inyo County, and that such limitation of development is an impact that should be addressed within the EIS/LEIS. This has not happened; the EIS/LEIS skirts this underlying larger issue by simply noting that existing conditions will not be significantly changed by the Proposed Project, and no off-installation lands will be significantly affected.

2 Likewise, while the County's 2011 comment letter requested that the EIS/LEIS evaluate consistency with the County's
1.14 planning policies and land use procedures, the EIS/LEIS confuses itself to noting that the Proposed Project will not result in any off-installation land use impacts.

3 The EIS/LEIS does note that the 2005 Comprehensive Land Use Management Plan (CLUMP) for the NAWSCL will be
13.52 updated based on information from the 2011 Air Installation Compatible Use Zones (AICUZ) plan. It is the County's contention that, absent such information in the EIS/LEIS, the update to the CLUMP should take the opportunity to reference and deal with the deeper land use issues brought about by adjacency to a military installation.

Sincerely,

Supervisor Marty Fortney, Chairperson
Inyo County Board of Supervisors

Cc: Kevin Carunchio, CAO
Randy Keller, County Counsel
Joshua Hart, Planning Director

CHINALAKE PUBLICCOMMENTS/023

Document 20

Naval Air Weapons Station China Lake Land Withdrawal

Comment Card

Comments can be submitted at any public meeting or postmarked by November 5, 2012.

1
15.5 I live 300 ft from North Range Rd. I support the complains. We need more natural resources & open space. Doing a good job so far as I can tell

Name: Johnnie Lloyd
Address: [redacted]
City: [redacted] State: _____ Zip Code: [redacted]
Telephone: _____ E-mail: _____

www.ChinaLakeLEIS.com

Document 21

Posted by: Craig McKenzie (cmc.mc3@gmail.com) **on** Nov 07, 2012 / 7:16AM

1 "I believe that the LEIS should address improved methods and increases in controlled periodic access to selected historic and cultural resources that exist inside the Navy site. While periodic visits to the petroglyph areas are allowed, it is but one of the historic or cultural areas that the public would like to visit. The Indian Wells Gem and Mineral Society, a nonprofit organization, was founded and started by individuals and professionals in the 1940's, was located on base, with interest and support seen by civilians and military alike. Rockhounding is a hobby and interest shared by all people, civilian, public, and military. The group was known at various times as the NOTS Rockhounds, and in October 1958, Vice Admiral M.
1.7 Pride attended the Annual Gem and Mineral Show put on by the NOTS Rockhounds, as a guest of the base Captain. It is likely Admiral Pride would have seen minerals on display that were collected in a sanctioned manner, on base, by NOTS Rockhounds. I would like the LEIS to reflect that the Navy would review and evaluate the potential for historic rockhound sites (gem, mineral, rock hobbyist) to be selectively opened for visitation. If sites are scoped for potential opening to rockhounds, the sites can also be reviewed in such a manner that actual mineral or rock collecting could occur periodically or on a rotational basis. We need to maintain and foster this historic and important tradition for hobbyists, like rockhounds. The public AND the Navy would benefit from an increase in this type of 'touring' through rockhound locations."

Document 22

Posted by: david Michael (dave@pacificdg.com) **on** Sep 13, 2012 / 10:37AM

1 "As a Ridgcrest land owner and developer I FULLY support the land
15.1 withdrawal .The negative impact on the community is minimal and and will position the base to further expand their mission for years to come. NAWS is critical to the support of many aspects of DOD.Thank you , David Michael"

Document 23

Sheila Miller
[redacted]

To whom it may Concern:

My sister, brother and myself have a 20% interest on the forty acre parcel just south of what is now Faller School. We were under the impression the Navy was going to revise to changes to their operations that would make our property safe along the school and high-density residential area adjacent to the school.

1 In 2007 AICUZ, stated that our property was in a Military influence area and was still subject to aircraft
10.31 departure safety risk. The recent EIS claims there is no safety risk but there is no clear explanation as to why it is now safe when just a few years ago it was considered unsafe. Can you please provide a detailed explanation as to difference?

Sincerely,

Sheila Miller

Sheila Miller

CHINALAKE PUBLICCOMMENTS/024

Document 24

November 8, 2012

Mr. Gene Beale (gene.beale@navy.mil)
NAWS China Lake Land With Drawl LEIS Project Manager
Naval Facilities Command Southwest Desert IPT
1226 Pacific Highway,
San Diego, Ca. 92132-5198

Encl: NPLNews 2005 Analysis sent to Supervisor Cervantes, Inyo County

Re: "DRAFT ENVIRONMENTAL IMPACT STATEMENT (EIS) / LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT (LEIS) FOR RENEWAL OF NAVAL AIR WEAPONS STATION CHINA LAKE PUBLIC LAND WITHDRAWAL August 2012".

National Public Lands News.com and myself are submitting these comments. Although the majority of the proposed area is still in ownership by the BLM, there is, sadly, little mention of that in this document, nor is there an in-depth description of some of those terms. That is why we are submitting the NPLNews 2005 Analysis. As such, ESA Sections 7 and 10 are applicable.

1 This EIS is requested by the Navy to Congress for an "additional 25 years" and as such
15.12 deserves a very through and comprehensive evaluation by all stakeholders, cities and counties including the general public at large. This EIS and LEIS clearly should have been two separate documents and the LEIS should have included the last Record of Decision for comparison in the LEIS.

Please note that our submitted comments are to improve this important document, to better support the mission at China Lake and ensure that the Navy's mission activities can continue, unimpeded by BRAC or any other cumulative impacts.

This EIS will be the cornerstone for many environmental documents at NAWSCL and the entire Indian Wells Valley for many years to come. It is important that the EIS be able to withstand reasonable transparency and be able to be a foundation for other environmental documents. According to the federal government, "The primary purpose of an EIS is to serve as an action-forcing device to insure that the policies and goals defined in the Act are infused into the ongoing programs and actions of the Federal Government. It shall provide full and fair discussion of significant environmental impacts and shall inform decision makers and the public of the reasonable alternatives, which would avoid or minimize adverse impacts or enhance the quality of the human environment… Statements shall be concise, clear, and to the point, and shall be supported by evidence that the agency has made the necessary environmental analyses."

This document falls short of meeting those expectations in multiple areas that are outlined below. Primarily, the document fails to identify alternatives in some areas, and it fails to document analysis for making reasonable or logical decisions in other areas. Since NAWSCL is the principal employer in the IWV and the primary reason for a majority of the people being in the IWV, the Navy needs to not only work with other agencies and the public but also lead the resolution of environmental, health and safety issues in the valley.

2 Document references required to review the Draft EIS, including the Integrated Natural
13.1 Resources Management Plan (INRMP) and the Integrated Culture Management Plan (ICRMP) are not provided. While we can understand why the ICRMP may or may not be provided because of constraints on tribal issues, it then should not be used as a source. Other documents sited were also not provided.

Document 24

3 OPNAVINSTR 5090.1B requires that preparers of the EIS be listed along with their
15.8 qualifications and National Environmental Policy Act (NEPA) training for their subject area. The draft EIS lists preparers and some job titles, but does not provide qualifications or training that qualifies the preparers as a subject matter expert. The missing EIS documents and information regarding qualifications and NEPA training of preparers still needs to be provided.

DRAFT LEIS GENERAL COMMENT

In Chap 4, of the LEIS the statement: "CLUMP…implementation would represent a beneficial impact" was noted 81 times. The CLUMP "revision" is incomplete and as noted above, redundant about the beneficial impact. .

CEQ Regulation Part 1502.9 discusses the requirements for a draft EIS. It states, as such: "1502.9(a) …. The draft statement (i.e. EIS) must fulfill and satisfy ***to the fullest extent possible the requirements established for the final statements*** in section 102(2)(C) of the Act. If a draft statement is ***so inadequate as to preclude meaningful analysis***, the agency shall prepare and circulate a revised draft of the appropriate portion."

4 Release of the Draft LEIS document for public review does not include the necessary
13.1 updated and critical documents that would allow the public to adequately and properly review and provide substantive comment on the draft LEIS as is required by NEPA. The
5 Draft LEIS should be revised and circulated again with new public hearings then be held.
13.5 These documents that are quoted should also be provided at libraries and or at least on-line.

DRAFT LEIS SPECIFIC COMMENT NAWSCL

6 Add 3.1.7.5 "The Darwin Community Services District (DCSD) has rights to access their
1.12 historical water source, Coso Cold Spring, which is within NAWSCL boundaries. Recently a 5-year easement was approved by NAWSCL for DCSD access. The DCSD is recommending an easement for the full 25 years period of the CLUMP. Access to the Spring is needed so that routine and emergency maintenance can be performed at the Spring and on the direct access road when needed."

7 Under 3.4.8 Riparian and Other Water-Related Habitats, line 22, Insert "Water is
4.10 currently extract for domestic use from Coso Cold Spring for the Darwin Community."

8 Under 3.7.9 insert, "Water is currently extracted from Coso Cold Spring for domestic
7.11 use by the community of Darwin."

9 Under 4.7.4, Change the wording under the Darwin Community Services District to read:
7.12 "The Darwin Community Services District is recommending an easement for the full period of the 25 year CLUMP to access the Coso Cold Spring such that routine and emergency maintenance can be performed on the dirt access road when needed."

The AICUZ requirement document, OPNAVINST 11010.36C states. "Each AICUZ study should normally include an evaluation of operational alternatives to reduce noise and Accident Potential Zone (APZ) impacts, e.g., flight track modifications, altering hours of operation, construction of acoustical enclosures, changes in pattern altitudes, etc. Evaluation of an operational alternative must balance noise and APZ changes with impacts on flight safety, operational capability, and cost. Proposed changes to already approved operational procedures requires documentation by the local command as to the reasons for the change along with notification and approval by the installation's chain of

Document 24

10 command. The 2011 AICUZ report referenced by the draft NAWSCL LEIS has multiple
10.35 changes to flight routes and allocation of flights between runways compared to the 2007 AICUZ study with no discussion of reasoning for the changes.

The objective of the NAWSCL safety program should be to avoid killing even one human life as the result of their flight operations. The 2007 AICUZ, the 2011 AICUZ, and the draft LEIS by reference indicate the NAWSCL safety objective is to limit the number of civilian fatalities via population density control. The NAWSCL safety program needs to include mitigation measures including operational procedures, arrival and departures corridors, etc., to ensure that the likelihood of taking even one life (whether it be civilian or military personnel) as the result of their operations is not significant. The NAWSCL generalization that the crashes are not likely to occur in a
11 populated area does not provide the needed assurance. NAWSCL needs to be clear
10.36 regarding its safety objectives and how it intends to satisfy those objectives, i.e., what specific mitigation has been imposed? Meaningful analysis needs to be provided that supports the conclusion stated by the LEIS, i.e., no significant risk.

12 The 2011 AICUZ report indicates runway 14 is used when runway 21 is not available.
2.29 Runway 21 is designed for safe operation under high usage including the development of an APZ 1 and an APZ 2. If runway 21 is expected to be unavailable more than infrequently, departure operations from runway 14 need to be reassessed including the development of an APZ 1 and APZ 2. Runway 14 does not automatically acquire runway 21 safety attributes simply by becoming the primary runway. The planned role for runway 14 over the next 25 years needs to be discussed.

13 The LEIS on flooding, page 3.7-9, is probably accurate for extreme flooding conditions.
7.6 Under the more nominal flooding conditions there is no path for the floodwaters to discharge onto NAWSCL property. The rainwater is retained in catch basins where it is stagnant and can create undesirable and unhealthy effects. The City of Ridgecrest has a drainage control plan, however, it has never been tied in with NAWSCL where the low areas of the valley are located. NAWSCL should take the lead in establishing an IWV drainage control plan that facilitates the drainage of rainwater onto the valley floor. The IWV has been waiting since the 80's for such a plan.

14 Ground water usage documentation, page 3.7-15, is similar. The production of ground
7.13 water exceeds the recharge of ground water. The estimates that the ground water basins will last 60 or 70 years are only estimates. The EIS implies that certain management activities could extend the water supply for 160 years. NAWSCL membership in the voluntary water management group is not assurance that a serious impact will not occur 10 or 20 years from now. A majority of the IWV population is either directly or indirectly here in support of NAWSCL. NAWSCL needs to take a leadership role in long-term water availability by investigating external water sources for the IWV.

15 The "Draft Recovery Plan" USFWS 1993 for the desert tortoise referenced on page 3.4-
4.11 19 is not the most recent document. There is a Revised Recovery Plan for the Mojave Populated Desert Tortoise (May 6, 2011) that is not mentioned. Why is NAWSCL considering a draft plan that is twenty years old the best source for recovery planning?

16 The LEIS states on page 3.4-28, "NAWSCL is preparing a Fire Management Plan.
4.7 Currently, the installation does not have a formal fire management policy, but has developed a fire management strategy that supports the NAWSCL mission. …" please define the difference between a policy and a strategy. Who is responsible for ensuring the strategy is executed? Does the strategy apply to all ranges?

CLUMP GENERAL COMMENT

17 The CLUMP document should have been provided in the form of a final draft, not as an
13.36 early working draft, considering revisions of the CLUMP itself is one of the Proposed Actions of the LEIS. The CLUMP as provided in the Appendix of the LEIS is incomplete and any "revisions" that were made since 2005 are not documented.

Document 24

CLUMP SPECIFIC COMMENT

18 -Maps are incomplete. Also missing is any reference to the Navy's Mojave Gunnery
13.10 Range near Edwards AFB, which is well known to be a China Lake managed parcel.

19 -It is inconsistent with regards to references. Example: ICRMP is stated as both a 2011
13.11 and a 2012 draft (see page 1-5 to 1-7).

20 -Zoning map, a critical map to define the areas of operations and the areas where
13.12 environmental concerns exist, is not even provided. So how can the Public comment on operations as they affect the environment when the CLUMP doesn't even provide those maps!

-Page ES-1: Third paragraph states:

" An element of the Proposed Action of the LEIS is updating and implementation of a revised CLUMP. The updated CLUMP will include refinements and adjustments to the policies, goals, objectives, and procedures as determined by……inputs…from…the public."

21 Where are the "refinements and adjustments"? What changed since the 2005 version?
Can't tell from what is provided, therefore it cannot be sufficiently reviewed.

13.7 When did the CLUMP presented here include inputs from the "public"? This CLUMP has not been provided for public review until now, too late for affecting the CLUMP revisions in this public release. If for instance the scoping meetings last year were part of the public comment that this is referencing, then, why are many of the comments made by the public not included?

22/13.1 -Page ES-1: What are "other technical directives"? Please state. No PA or ICRMP
23/13.2 provided. And the "2000 INRMP" used in support of the CLUMP actions and LEIS analysis is a document that is statutorily out-of-date.

24 -Page ES-2: Third paragraph claims that Zoning maps provide day-to-day direction for
13.13 managing land use and are based on "lessons learned" since endorsement of 2005 CLUMP. Yet this document does not clarify or provide any written support that any
25/13.14 changes have actually been made based on "lessons learned". What is that process and how does the public, city, county and BLM participate?

26 -Page 1-1: Second paragraph-Once again, what got "updated" in this draft CLUMP from
13.49 2005? Please list changes or clearly identify changes in the text. Otherwise, this is impossible to review if you can't even tell where such changes occurred.

27 -Page 1-4: 1.5.4 Coordination Policy: How are "issues of mutual interest and concern"
13.15 identified in this document? This CLUMP does not state how these are identified, nor are they listed in this document.

28/13.16 -Page 1-5: The draft LEIS has the ICRMP referenced as a 2011 document, not a 2012 document as the CLUMP has it. Which is it? Has this CLUMP ever even been provided to the public for review? Also, was the 2011 AICUZ update ever provided to the public
29/13.17 for a review as well?

30/13.18 -Page 1-5 item 2: The LEIS states the duration is for the next 25 years. Why does this section therefore say 5 years?

31 -Page 1-6 Section 1.7: CLUMP accommodates management in a "cost-effective" manner.
13.20 Really? How? Many of the LEIS mitigations certainly don't appear to be cost-effective.

For example, NAWS "Sensitive Species" surveys are being required in the LEIS and CLUMP as "mitigation", but many of the species on the extensive list provided as NAWS "Sensitive" (see LEIS

CHINALAKE PUBLICCOMMENTS/025

Document 24

31 Appendix D Tables D-1 and D-2) are not supported by any clear scientific, academic, or regulatory references that would back up such a designation of "sensitive". That is not exactly a "cost-effective" approach.

13.20 Other examples of "sensitive" mitigations are provided in the Bio and Cultural Resources section of the LEIS. Please explain either how the mitigation in the LEIS is both required ***AND*** cost effective. The claim of doing "cost-effective" management is misleading to the public as is currently written.

32 -Page 1-7: Figure 1-1. This claims that compliance and conservation requirements somehow undergo a "public and agency review". Clearly this has not happened as the

13.21 ICRMP, PA's, BO's, and INRMP has not been provided for public review, as was previously mentioned.

33/13.22 -Page 2-1 says hectares = 445,156. But LEIS page1-8 lines 19 and 20 add up to 449,379 acres…? Which is correct?

34/13.23 -Page 2-6/2-7 maps: What are "landforms"?

35 -Page 2-23: Section 2.5- "(Refer to draft ICRMP)"- It has never been provided for public

13.24 review and comment. "(See INRMP)"- A revised version has not been provided to the public for review and comment.

36 -Page 2-23: Last paragraph- why are the acreages for cultural resources from almost over a year ago? Has there been no survey work over the past year? What is the most current

13.25 as of August 2012, i.e. at the release of the LEIS for public review? Page 2-24 also refers to archeo site numbers as of Nov 2011. Again, has there been no survey work over the past year?

37 -Page 2-25 2.5.2 Natural Resources: Using a 2000 INRMP is not compliant with Sikes

13.50 Act statute. Certainly since 2000 the Navy has many revisions to this document that are needed. So therefore, this is not going to be an accurate depiction of the most current status of natural resources plans and management actions for the draft LEIS and CLUMP. Please provide a revised INRMP as part of this LEIS release for public review.

38 -Page 2-25 Last Paragraph: The following references US Navy 1998b/US Navy 1996 are

13.26 not provided in the CLUMP, so it is unknown what these are and if they apply with regards to these species being considered "unusual". Since these references are 14-16 years old, their findings may no longer be considered reliable.

39/13.26 -Page 2-26 Federal Listed Species: Similar to Page 2-25, in that refers for USFWS 1998a and Bagley 1986 are not provided for reference inspection.

-Pages 3-2 and 3-3 Land Use Zones: The following is stated in 3.2.1:

40 "The CLUMP employs land use zone designations to define areas that have traditionally received various types and intensities of use and identifies environmentally sensitive areas where intensive land use will be discouraged. The land use zoning concept acknowledges that select areas of the installation will continue to receive more intensive RDAT&E support and training activities than other locations".

This statement is really the nuts-and-bolts of how resources will be managed and

13.28 operations will occur in a manner that makes it understandable to the public regarding how effects to the environment on China Lake will be reduced or managed for. In the words of the CLUMP itself on page ES-2 the land use zoning process is "a key element of the CLUMP management framework". However, as noted time and time again the document is incomplete!

Please note, there are no land use designations provided, and no maps to explain these designations. Figures 3-1 and 3-2 are referenced as "Land Use Zones", but the figures are both mislabeled as "Military Land Uses" and **THERE IS NO MAP PROVIDED…IT IS BLANK!!!** Therefore, how can the public understand the land uses as they relate to zoning that protects resources at the same time!

Document 24

41/13.30 -Page 3-3 "Intensive Use Zone and Safety and Security Zone"---Where are those located on a map?

42 -Page 3-6 Section 3.2.2: No revised INRMP or any draft ICRMP have been provided to

13.31 the public, so how can the public review and understand the "management priorities that have been identified" in those documents! "Resource feature descriptions" apparently are found in these documents, but are not provided to the public.

43/13.32 -Page 3-6 Resource Priorities: Table 3-1 and 3-2 are not provided. Figures 3-3, 3-4, 3-5,

44/13.33 and 3-6 are maps only, and do not relate to the priorities listed on page 3-6. This includes no maps of the springs and riparian areas and the locations of NAWS sensitive species,

45/13.34 even though they are discussed in text as being in maps 3-3 and 3-4 as part of the "natural resource management areas".

46/13.35 -Page 3-7: acreages on this page do not match the LEIS acreages for test and target areas, and installation overall acreages.

47 -Page 3-8: Map referenced on this page (Figures 3-5 and 3-6) do not appear complete.

13.36 The maps may be well out of date. What are the acreages for surveys and sites as of Aug 2012?

48 -Page 3-9: Figure 3-3 Map- NR Management "Priorities"? There is nothing on this map

13.51 or in the legend that has the priority levels clearly mapped. Same for Figures 3-4 and 3-5.

49/13.37 -Page 3-13 Second sentence of 3.3: What does this statement mean?

50/13.38 -Page 3-15 Section 3.3.2: What exactly is the "installation's policy per OPNAVINST 5090.1C?

51 -Page 3-16 Objective 3-1 Planned Action Item #4 (incorrectly marked as item 2 in

13.39 CLUMP): Why are fire management actions being referenced back to the 2004 Final EIS, and not to the current draft LEIS and is this a strategy or a plan? Also, the fire mgt

52 section in the 2004 FIES as referenced is not consistent with the draft LEIS fire mgt

13.40 planned actions. Also, when does the public get to review the revised BO with regards to the proposed fire management action?

53/13.41 -Page 3-19 Objective 3-9 Planned action #3: What is an "EMD sensitivity map" and where is it in this CLUMP?

54 -Page 4-1 Section 4.1 First sentence: Chapter 1 (page 1-2) CLUMP goal no. 4 does NOT

13.42 match this sentence. It has nothing to do with "improving efficiency of land use management practices".

55 -Page 4-1: What is the MOA in appendix B? No MOA provided. Also, what is the

13.43 CRNSW/NAWCWD MOA (2011)? Is that to be provided too? What are differences between these MOA's??? How do they relate to the proposed action and to the CLUMP revisions?

56/13.44 -Page 4-1: Provide NAWSINST 11100.1 to the public as part of this CLUMP, since it is referenced.

57 -Page 4-4 Section 4.3: "The installation's environmental review process is undergoing

13.45 revision with Commander Navy Region Southwest and Commander Naval warfare center weapons division". This revision process needs to be completed and provided to the public as part of the CLUMP/EIS review. The review process for Navy actions is important and yet it is under revisions while this LEIS and CLUMP is being updated. Please complete the revision of the process and provide a description of that for public disclosure as part of this LEIS review.

58 -Page 4-5: Who is "EPMD"? And what is "NAWSINST 5090.1X"? Since you need to

13.46 see that document as part of this CLUMP description of doing environmental reviews, please provide so that a review of the CLUMP process by the public can be done.

Document 24

59/13.47 -Page 4-5: This can't be the last page of this document? It seems to be hanging, and there is no ref or appendix section, so…? Is this even the entire draft document???

MISSING DOCUMENTS

40 The following missing documents are needed for public inspection before a public review of the LEIS can be completed:

-Integrated Natural Resources Management Plan (INRMP). Current reference to a 2000 INRMP is statutorily inadequate. According to the Sikes Act and the Navy's OPNAVINST 5090.1C, the INRMP shall be reviewed annually, and updated and renewed every 5 years. An INRMP from the past 5 years should be provided to the public for review, and provided as a final in support of this LEIS. All INRMP's are required to undergo public inspection, per Sikes Act. The current China Lake INRMP violates Sikes Act requirements. Considering that China Lake is the largest landholding installation of the Navy, and there are expected to be many natural resources, certainly there have been many management plans and actions since 2000 that have taken place. Those plans and actions of an updated INRMP need to be provided to the public before the release of the LEIS for public review. The LEIS on page 1-6 lines 2-3 even state that the INRMP is "an element of the CLUMP resources management goals and guidelines." As such, a revised INRMP that is not over 12 years old needs to be provided as part of the CLUMP decision review process.

-Integrated Cultural Resources Management Plan (ICRMP). The Department of Defense's own Instruction 4715.16 requires that the ICMRP shall include coordination of processes with the public and make the draft ICRMP available for review in order to "help ensure proper management of the installation's cultural resources", and mandates

13.48 DoD work with the public and other interested stakeholders regarding cultural resources on the public's lands. The Navy has never offered up China Lake's ICRMP for public review. Considering the amount of world-renown resources on the installation, release of a public version for review and input should have occurred before the draft LEIS was released. Professional input and review should be considered important to the Navy if they are serious about managing public resources on their lands. The ICRMP is listed in the CLUMP and throughout the LEIS inconsistently as both a 2011 and a 2012 dated version. Which is it? The LEIS refers to Sections of the ICRMP Appendices for the management actions, but those actions are never provided to the public and the associated appendices!

-Revised Biological Opinion (BO). The LEIS routinely quotes requirements from a 1995 Biological Opinion, yet also makes references to a ***revised*** Biological Opinion. That so-called "revised" BO has not been provided to the public, so the public cannot review the proposed management actions and new guidance in the context of the LEIS operations as presented. Please review ESA Section 7.

-Programmatic Agreement (PA) and Section 106 Consultations. The ICRMP requires a PA as part of its finalization with consultations with the state Office of Historic Preservation, the federal Advisory Council on Historic Preservation, and local affiliated tribes. No such document has been provided to the public as part of this process. Therefore, agreements made under the Section 106 process of National Historic Preservation Act related to this LEIS is unknown to the public and therefore the public cannot make comment to the LEIS with respect to the PA and Section 106 approved management requirements. Please review ESA Section 10.

Recommendation

The long-term sustainability of NAWSCL requires several significant issues be resolved, including aircraft safety, noise, ground water availability, drainage, historic water rights to name just a few. All these topics need to be addressed in much more detail as well as in a more analytical nature. We would like to see a plan to monitor the springs and seeps on the base on a regular basis. We highly recommend the Navy resubmit the LEIS when all corrections have been made and the necessary documents are available for public

Document 24

inspection. Compliance with NEPA standards will ensure the sustainability of the NAWSCL mission as well as retain both the public and DOD support for the NAWSCL mission.

Sophia Anne Merk (SAM)
National Public Lands News.com
941 E. Ridgecrest
Ridgecrest, California 93555
samnplnews@yahoo.com

CC:

Horst G. Greczmiel,
Associate Director for NEPA Oversight.
Executive of the President, Council on Environmental Quality
Washington DC

Susan Bromm, Director.
EPA, Office of Enforcement and Compliance Assurance (OECA)
Washington, DC

Capt. Dennis A. Lazar.
Commanding Officer, NAWS
China Lake, Ca.

Rear Admiral, Dixon Smith.
Commanding Officer, Navy Region Southwest
San Diego Ca.

James G Kenna, State Director.
Bureau of Land Management California State Office
Sacramento, Ca.

Kim Berns, Lease Renewal Division.
Bureau of Land Management,
Washington DC

Carl Symons, Director, Ridgecrest Field Office.
Bureau of Land Management.
Ridgecrest, Ca.

Lori Ford, NEPA, Ridgecrest Field Office.
Bureau of Land Management
Ridgecrest Ca.

Kevin McCarthy, Representative, 22nd Congressional District.
Bakersfield Ca.

Buck McKeon, Representative, 25th Congressional District
Santa Clarita, California

Jon McQuiston, Kern Co Supervisor.
Bakersfield, Ca.

Lorelei Oviatt, Kern Co. Planning Director.
Bakersfield, Ca.

CHINALAKE PUBLIC/COMMENTS/026

Document 24

Shannon Grove, 32nd Assembly District.
Bakersfield, Ca.

Jean Fuller, 18th Senatorial District.
Bakersfield, Ca.

Richard Cervantes, Inyo Co. Supervisor
Independence, Ca

Matt Kingsley, Inyo Co Candidate
Lone Pine, Ca

Inyo County Planning Department
Independence, Ca

Diane Feinstein, Senator.
Fresno Ca.

Barbara Boxer, Senator.
Fresno Ca.

Ridgecrest City Council.
Ridgecrest, Ca.

Raymond Kelso, Pleistocene Foundation
Ridgecrest, Ca

Document 24A

February 11, 2013

Mr. Gene Beale (gene.beale@navy.mil)
NAWS China Lake Land With Drawl LEIS Project Manager
Naval Facilities Command Southwest Desert IPT
1226 Pacific Highway,
San Diego, Ca. 92132-5198

Encl: NPLNews 2005 Analysis sent to Supervisor Cervantes, Inyo County

Re: "DRAFT ENVIRONMENTAL IMPACT STATEMENT (EIS) / LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT (LEIS) FOR RENEWAL OF NAVAL AIR WEAPONS STATION CHINA LAKE PUBLIC LAND WITHDRAWAL August 2012".

Dear Mr. Beale:

The National Public Lands News was relieved to find that the NAWS LEIS Project realized their oversight in not including two documents that were supposed be included in the package for the LEIS and the Withdrawal and reopening the comment period for additional thirty day period.

The NAWS LEIS Project should have provided oversight by the different agencies and their responses should have been included in this report.

After reading the documents that were not included, we find that not only do we stand by what we wrote in our comments of 11/08/12 except the two paragraphs that mention the INRMP and ICRMP were missing.

1 **5.27** Many of the documents that have been provided are from the 1995 ERA, which indicates that no new work has been completed and, with only 14% of the landmass being archeologically surveyed, we truly wonder how complete this assessment is.

Criteria is provided that would exclude building large edifices going through a proper EIS, however, with the mission of China Lake being only for a period of 25 years, that seems to contradict itself in general.

2/7.18 We are still missing general comments that were provided by the public and whether it was used at all, for instance Darwin water comments.

3 **5.28** There are many historical roads and railways that seem not to be included in this report. They are mentioned in text; however, in the final analysis they seem to have dropped off the chart for historical inclusion.

4 **5.29** We also have concern that the Kaisuii Indian Tribes that were acknowledged for using the Coso Hot Springs were not mentioned in the Memorandum of Understanding for using the area.

Please read my previous letter. We spent a large quantity of time reading this report and so did the general public.

Courteously,

Document 24A

Sophia Anne Merk, Director
National Public Lands News
941 East Ridgecrest Boulevard
Ridgecrest, California 93555

samnplnews@yahoo.com

CC same distribution

Document 25

Pleistocene Foundation

2362 LUMILL ST. RIDGECREST, CA. 93555 760-375-9833
pleistocene@verizon.net
Environmental Research and Education

Mr. Beale
NAWS China Lake Land Withdrawl LEIS Project Manager
Naval Facilities Command Southwest Desert IPT
1226 Pacific Highway,
San Diego, Ca. 92132-5198

BACKGROUND

We appreciate the Navy's efforts to inform the public about the "DRAFT ENVIRONMENTAL IMPACT STATEMENT (EIS) / LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT (LEIS) FOR RENEWAL OF NAVAL AIR WEAPONS STATION CHINA LAKE PUBLIC LAND WITHDRAWAL August 2012". This EIS is requested by the Navy to Congress for an "additional 25 years" and as such deserves a very through and comprehensive evaluation by all interested parties.

1 **15.9** 1. This Environmental Impact Statement under current review will be the cornerstone for environmental understanding at NAWSCL and the entire Indian Wells Valley for many years to come. It is important that the EIS be able to withstand reasonable scrutiny. According the federal government, "The primary purpose of an environmental impact statement is to serve as an action-forcing device to insure that the policies and goals defined in the Act are infused into the ongoing programs and actions of the Federal Government. It shall provide full and fair discussion of significant environmental impacts and shall inform decision makers and the public of the reasonable alternatives, which would avoid or minimize adverse impacts or enhance the quality of the human environment... Statements shall be concise, clear, and to the point, and shall be supported by evidence that the agency has made the necessary environmental analyses." This document falls short of meeting those expectations in *multiple* areas that are outlined below. Primarily, the document fails to identify reasonable alternatives in some areas, and it fails to document meaningful analysis for making reasonable or logical decisions in other areas. Since NAWSCL is the principal employer in the IWV and the primary reason for a majority of the people being in the IWV, the Navy needs to not only work with other agencies and the public but also lead the resolution of environmental and safety issues in the valley.

2 **15.7**

3 **13.1** 2. We requested during the EIS NOI scoping process the public be provided references required to review the draft EIS, including the Integrated Natural Resources Management Plan (INRMP) and the Integrated Culture Management Plan (ICRMP). Multiple documents were not provided. We also requested via NOI input that preparers of the EIS be listed along with their qualifications and NEPA training for their subject area as required by *OPNAVINSTR 5090.1B*. The draft EIS lists preparers and some job titles, but does not provide qualifications or training that qualifies the preparer as a subject matter expert. The missing EIS

4 **15.8** documents and information regarding qualifications and NEPA training of preparers still needs to be provided.

DRAFT LEIS GENERAL COMMENT

5 **13.7** 1. In Chap 4, of the LEIS the statement: "CLUMP...implementation would represent a beneficial impact" was noted 81 times. The Comprehensive Land Use Management Plan is clearly a critical foundation document. The CLUMP "revision" is entirely incomplete and has not been accomplished, even though it is stated right up front as Proposed Action item #2 in paragraph (e) of the cover sheet of the released draft LEIS, as well as throughout the rest of the document. Furthermore, the original CLUMP needs to be provided for comparison purposes. It was not.

CHINALAKE PUBLICCOMMENTS/027

Document 25

Pleistocene Foundation

2362 LUMILL ST. RIDGECREST, CA. 93555 760-375-9833
pleistocene@verizon.net
Environmental Research and Education

CEQ Regulation Part 1502.9 discusses the requirements for a draft EIS. It states, as such: "1502.9(a) .... The draft statement (i.e. EIS) must fulfill and satisfy *to the fullest extent possible the requirements established for the final statements* in section 102(2)(C) of the Act. If a draft statement is *so inadequate as to preclude meaningful analysis*, the agency shall prepare and circulate a revised draft of the appropriate portion."

6 | 2. Therefore, because release of the draft LEIS document for public review did not, **at a minimum,** include the necessary updated and critical foundational documents that would allow the public to adequately and properly review and provide substantive comment on the draft LEIS as is required by the National Environmental Policy Act, and in accordance with the NEPA statute referenced above, this public
13.5 | hearing should be rescinded by the Navy, and once the supporting documents are ready for public review and inspection, only then the LEIS should be revised and circulated again and a new public hearing then be held. Otherwise, reviewing the current draft LEIS without these documents provided, or with a Proposed Action description (i.e. the CLUMP) that is in such poor condition and wholly "inadequate" as it is, is a pointless effort and does not meet the legal obligations of the Navy nor its own internal directives and policies.

7 | Please note that our submitted comments are to improve this important document, to better support the
13.6 | mission at China Lake and ensure that the Navy's mission activities can continue, unimpeded by BRAC or any other cumulative impacts.

DRAFT LEIS SPECIFIC COMMENT

1. The AICUZ requirement document, OPNAVINST 11010.36C states, "Each AICUZ study should normally include an evaluation of operational alternatives to reduce noise and Accident Potential Zone (APZ) impacts, e.g., flight track modifications, altering hours of operation, construction of acoustical enclosures, changes in pattern altitudes, etc. Evaluation of an operational alternative must balance noise and APZ changes with impacts on flight safety, operational capability, and cost. *The decision to accept or reject a new alternative must be clearly presented.* Proposed changes to already approved operational procedures will require documentation by the local command as to the reasons for the change along with notification and approval by the installation's chain of command. Environmental documentation in compliance with the National Environmental Policy Act (NEPA) may also be required." The 2011 AICUZ report referenced by the *draft NAWSCL LEIS has multiple changes to flight routes and allocation of Flights between runways* compared to the 2007 AICUZ study with no discussion of reasoning for the changes. All the changes appear to increase safety risk and noise over populated areas. The trade studies that should have been done prior to the release of the draft documents still need to be done in revisions to the 2011 AICUZ report and the draft LEIS. Lack of data used in the noise contour modeling makes it impossible to review the 2011 AICUZ report and *therefore the draft LEIS.*

8 | 2. The objective of the NAWSCL safety program should be to avoid killing even one human life as the result of their flight operations. The 2007 AICUZ, the 2011 AICUZ, and the draft LEIS by reference indicate the NAWSCL safety objective is to limit the number of civilian fatalities via population density
2.18 | control. That strategy is flawed since it ignores the fact that Ridgecrest is already highly populated. The *Navy pays hundreds of million dollars to design, develop, and install ejection seats in aircraft so not so* much as one Navy personnel is killed given there is a crash. NAWSCL needs to adopt the same attitude
9 | toward civilian lives. Aircraft departure operations inherently produce safety risk; which if not mitigated could endanger airfield personnel and off-base civilians as well. The NAWSCL safety program needs to
10.16 | include mitigation measures including operational procedures, departures corridors, etc., to ensure that the *likelihood of taking even one life as the result of their operations is not significant.* The NAWSCL generalization that the crashes are not likely to occur in a populated area does not provide the needed assurance. NAWSCL needs to be clear regarding its safety objectives and how it intends to satisfy those objectives, i.e., what specific mitigation has been imposed? Meaningful analysis needs to be provided that

Document 25

Pleistocene Foundation

2362 LUMILL ST. RIDGECREST, CA. 93555 760-375-9833
pleistocene@verizon.net
Environmental Research and Education

supports the conclusion stated by the LEIS, i.e., no significant risk.

10 | 3. The 2011 AICUZ report indicates runway 14 is used when runway 21 is not available. Runway 21 is designed for safe operation under high usage including the development of an APZ 1 and an APZ 2. If
10.21 | runway 21 is expected to be unavailable more than infrequently, departure operations from runway 14 need to be reassessed including the development of an APZ 1 and APZ 2. Runway 14 does not automatically acquire runway 21 safety attributes simply by becoming the primary runway. Please explain the planned role for runway 14 over the next 25 years.

11 | 4. The description provided in the LEIS on flooding, page 3.7-9, is probably accurate for extreme flooding
7.5 | conditions. Under the more normal flooding conditions there is no path for the floodwaters to discharge onto NAWSCL property. The rainwater is retained in catch basins where it is stagnant and can create undesirable and unhealthy effects. The City of Ridgecrest has had a drainage control plan since the late
12 | 1980's, but it is our understanding that it has never been tied in with NAWSCL where the low areas of the valley are located. NAWSCL should take the lead in establishing an IWV drainage control plan that
7.6 | facilitates the drainage of rainwater onto the valley floor. The current method of trying to retain water within the city is not healthy and a waste of valuable land. Does NAWSCL have a plan to support the IWV?

13 | 5. The discussion in the LEIS regarding ground water usage, page 3.7-15, is similar to our understanding. The production of ground water is by far exceeding the recharge of ground water. The current rate of water
7.7 | production cannot last forever and perhaps not much longer. The estimates that the ground water basins will last 60 or 70 years are only estimates. These estimates do not account for the impact on water quality that the high pumping rate could create. New firms are being started, which will further increase the demand for ground water. The EIS indicates that certain management activities could extend the water
14 | supply for 150 years. What management activities are controlled by NAWSCL? What plan is going to implement them? NAWSCL membership in the voluntary water management group is not assurance that a
7.8 | serious impact will not occur 10 or 20 years from now. A majority of the IWV population is either directly or indirectly here in support of NAWSCL. It is time NAWSCL takes a leadership role in long-term water *availability mitigation by investigating external water sources for the IWV.*

15 | 6. Please provide the "Draft Recovery Plan" USFWS 1993 for the desert tortoise referenced on page 3.4-
4.5 | 19. Is this document the most recent? We're confused about the statement "The Recovery Plan's conservation strategy was based upon the best available information on desert tortoises gathered and
16 | analyzed over the past 20 years;"..."The Draft Recovery Plan represented an in-depth analysis of the *conservation needs of the desert tortoise." Does NAWSCL consider a draft plan that is twenty years old*
4.6 | the best source for recovery planning?

17 | 7. The LEIS states on page 3.4-28, "NAWSCL is preparing a Fire Management Plan. Currently, the
4.7 | installation does not have a formal fire management policy, but has developed a fire management strategy that supports the NAWSCL mission, ..." please provide. What is the difference between a policy and a *strategy? How is the strategy funded? Who is responsible for ensuring the strategy is executed? Does the* strategy apply to all ranges?

CLUMP GENERAL COMMENT

18/13.7 | The CLUMP is a poorly written document that is wholly unreviewable as provided. The document should have been provided in the form of a final draft, not an early working draft, considering revisions of the CLUMP itself is one of the Proposed Actions of the LEIS. The CLUMP as provided in the Appendix of the
19 | LEIS is incomplete and any "revisions" that were made since 2005 are not discernable to a reviewer and
13.7 | therefore, as an incomplete Proposed Action description, cannot yet be reviewed under the guise of a "public review" per NEPA statute.

Document 25

Pleistocene Foundation

2362 LUMILL ST. RIDGECREST, CA. 93555 760-375-9833
pleistocene@verizon.net
Environmental Research and Education

CLUMP SPECIFIC COMMENT

20/13.10 | -Maps are incomplete. Also missing is any reference to the Navy's Mojave Gunnery Range near Edwards AFB, which is well-known to be a China Lake managed parcel.

21/13.11 | -It is inconsistent with regards to references. Example: ICRMP is stated as both a 2011 and a 2012 draft (see page 1-5 to 1-7).

22 | -Zoning map, a critical map to define the areas of operations and the areas where environmental concerns
13.12 | exist, is not even provided. So how can the Public comment on operations as they affect the environment when the CLUMP doesn't even provide those maps!

23 | -Page ES-1. Third paragraph states:

13.7 | " An element of the Proposed Action of the LEIS is updating and implementation of a revised CLUMP. The updated CLUMP will include refinements and adjustments to the policies, goals, objectives, and procedures as determined by ..... inputs ..from .. the public."

Where are the "refinements and adjustments"? What changed since the 2005 version? Can't tell from what is provided, therefore it cannot be sufficiently reviewed.

24/13.7 | When did the CLUMP presented here include inputs *from* the "public"? This CLUMP has not been provided for public review until now, too late for affecting the CLUMP revisions in this public release.

25 | -Page ES-1: What are "other technical directives"? Please state. No PA or ICRMP provided. And the
13.1 | "2000 INRMP" used in support of the CLUMP actions and LEIS analysis is a document that is therefore woefully and statutorily out-of-date.

26/13.2 | -Page ES-2: Third paragraph claims that Zoning maps provide day-to-day direction for managing land use and are based on "lessons learned" since endorsement of 2005 CLUMP. Yet this document does not clarify
27/13.13 | or provide any support that any changes have actually been made based on "lessons learned". Please provide notations as to where "lessons where learned" and what those lessons were. Also, who and how
28/13.14 | often do *"customers" and "general public" get to participate in the annual review and revision of the* CLUMP, as mentioned? How is that process to be done?

29 | -Page 1-1: Second paragraph-Once again, what got "updated" in this draft CLUMP from 2005? Please list
13.7 | changes or clearly identify changes in the text. Otherwise, this is impossible to review if you can't even tell where such changes occurred.

30/13.15 | -Page 1-4: 1.5.4 Coordination Policy: How are "issues of mutual interest and concern" identified in this document? This CLUMP does not state how these are identified, nor are they listed in this document.

31/13.16 | -Page 1-5: The draft LEIS has the ICRMP referenced as a 2011 document, not a 2012 document as the
32/13.17 | CLUMP has it. Which is it? Has this CLUMP ever been provided to the public for review? Also, was the 2011 AICUZ update ever provided to the public for a review as well?

33/13.18 | -Page 1-5 item 2: The LEIS states the duration is for the next 25 years. Why does this section therefore say 5 years?

34/13.20 | -Page 1-6 Section 1.7: CLUMP accommodates management in a "cost-effective" manner. Really? How? Many of the LEIS mitigations certainly don't appear to be cost-effective.

For example, NAWS "Sensitive Species" surveys are being required in the LEIS and CLUMP as "mitigation", but many of the species on the extensive list provided as NAWS "Sensitive" (see LEIS

Appendix D Tables D-1 and D-2) are not supported by any clear scientific, academic, or regulatory references that would back up such a designation of "sensitive". That is not exactly a "cost-effective" approach.

Document 25

Pleistocene Foundation

2362 LUMILL ST. RIDGECREST, CA. 93555 760-375-9833
pleistocene@verizon.net
Environmental Research and Education

Other examples of "sensitive" mitigations are provided in the Bio and Cultural Resources section of the LEIS. Please explain either how the mitigation in the LEIS is both required *AND* cost effective. The claim of doing "cost-effective" management is misleading to the public as is currently written.

35 | -Page 1-7: Figure 1-1. This claim that compliance and conservation requirements somehow undergo a
13.21 | "public and agency review" Clearly this has not happened as the ICRMP, PA's, BO's, and INRMP has not been provided for public review, as was previously mentioned.

36/13.22 | -Page 2-1 says hectares = 445,156. But LEIS page1-4 lines 19 and 20 add up to 445,279 acres. ? Which is correct?

37/13.23 | -Page 2-6/2-7 maps: What are "landforms"?

38/13.24 | -Page 2-23: Section 2.5- "(Refer to draft ICRMP)"- It has never been provided for public review and comment. "(See INRMP)". A revised version has not been provided to the public for review and comment.

39 | -Page 2-23: Last paragraph- why are the acreages for cultural resources from almost over a year ago? Has
13.25 | there been no survey work over the past year? What is the most current as of August 2012, i.e. at the release of the LEIS for public review? Page 2-24 also refers to archeo site numbers as of Nov 2011. Again has there been no survey work over the past year?

40 | -Page 2-25 2.9.2 Natural Resources: Using a 2000 INRMP is not compliant with Sikes Act statute.
13.2 | Certainly since 2000 the Navy has many revisions in this document that are needed. So therefore, this is not going to be an accurate depiction of the most current status of natural resources plans and management actions for the draft LEIS and CLUMP. Please provide a revised INRMP as part of this LEIS release for public review.

41 | -Page 2-25 Last Paragraph: The following references US Navy 1998b/US Navy 1996 are not provided in
13.26 | the CLUMP, so it is unknown what these are and if they apply with regards to these species being considered "unusual". Since these references are 14-16 years old, their findings may no longer be considered reliable.

42 | *-Page 2-26 Federal Listed Species: Similar to Page 2-25, in that refers the USFWS 1998a and Bagley 1986* are not provided for reference inspection.

-Page 3-2 and 3-3 Land Use Zones: The following is stated in 3.2.1:

"The CLUMP employs land use zone designations to define areas that have traditionally received various types and intensities of use and identifies environmentally sensitive areas where intensive land use will be discouraged. The land use zoning concept acknowledges that select areas of the installation will continue
13.28 | to receive more intensive RDAT&E support and training activities than other locations".

This statement is really the nuts-and-bolts of how resources will be managed and operations will occur in a manner that makes it understandable to the public regarding how effects to the environment on China Lake will be reduced or managed for. In the words of the CLUMP itself on page ES-2 the land use zoning process is "a key element of the CLUMP management framework". However, as noted time and time again, the document is incomplete!

Please note, there are no land use designations provided, and no maps to explain these designations. Figures 3-1 and 3-2 are referenced as "Land Use Zones", but the figures are both mislabeled as "Military Land Uses" and **THERE IS NO MAP PROVIDED...IT IS BLANK!!!** Therefore, how can the public
43 | understand the land uses as they relate to zoning that protects resources at the same time! This, in essence,
13.29 | makes the LEIS and CLUMP *unreviewable* and the Navy not compliant with NEPA regulation regarding and affording the public an adequate review and comment.

44/13.30 | -Page 3-3 "Intensive Use Zone and Safety and Security Zone"—Where are these located on a map?

45/13.31 | -Page 3-6 Section 3.2.2: No revised INRMP or any draft ICRMP been provided to the public, so how can the public review and understand the "management priorities that have been identified" in those

CHINALAKE PUBLICCOMMENTS/028

Document 25

Pleistocene Foundation

2362 LUMILL ST. RIDGECREST, CA. 93555 760-375-9833
pleistocene@verizon.net
Environmental Research and Education

documents! "Resource feature descriptions" apparently are found in these documents, but are not provided to the public.

46/13.32 -Page 3-6 Resource Priorities. Table 3-1 and 3-2 are not provided. Figures 3-3, 3-4, 3-5, and 3-6 are maps only, and do not relate to the priorities listed on page 3-6. This includes no maps of the springs and riparian

47/13.33 areas and the locations of NAWS sensitive species, even though they are discussed in text as being in maps 3-3 and 3-4 as part of the "natural resource management areas".

48/13.35 -Page 3-7: acreages on this page do not match the LEIS acreages for test and target areas, and installation overall acreages

49/13.36 -Page 3-8: Map referenced on this page (Figures 3-5 and 3-6) do not appear complete. The maps may be

50/13.34 well out of date. What are the acreages for surveys and sites as of Aug 2012?

51/13.37 -Page 3-9: Figure 3-3 Map- NR Management "Priorities"? There is nothing on this map or in the legend that has the priority levels clearly mapped. Same for Figures 3-4 and 3-5.

-Page 3-13 Second sentence of 3.3: What does this statement mean?

52/13.38 -Page 3-15 Section 3.3.2. What exactly is the "installation's policy per OPNAVINST 5090.1C?

53/13.39 -Page 3-16 Objective 3-1 Planned Action Item #4 (incorrectly marked as item 2 in CLUMP as it is mismarked): Why are fire management actions being referenced back to the 2004 Final EIS, and not to the current draft LEIS? Also, the fire mgt section in the 2004 FEIS as referenced is not consistent with the draft

54/13.40 LEIS fire mgt planned actions. Also, when does the public get to review the revised BO with regards to the proposed fire management action?

55/13.41 -Page 3-19 Objective 3-9 Planned action #3: What is an "EMD sensitivity map" and where is it in this CLUMP?

56/13.42 -Page 4-1 Section 4.1 First sentence: Chapter 1 (page 1-2) CLUMP goal no. 4 does NOT match this sentence. It has nothing to do with "improving efficiency of land use management practices".

57 -Page 4-1: What is the MOA in appendix B? No MOA provided. Also, what is the CRNSW/NAWCWD

13.43 MOA (2011)? Is that to be provided too? What are differences between these MOA's??? How do they relate to the proposed action and to the CLUMP revisions?

58/13.44 -Page 4-1: Provide NAWSINST 11100.1 to the public as part of this CLUMP, since it is referenced.

59 -Page 4-4 Section 4.3: "The installation's environmental review process is undergoing revision with Commander Navy Region Southwest and Commander Naval warfare center weapons division" ... What

13.45 does this mean? If something that is part of the review and approval process is being revised, this revision process needs to be completed and provided to the public as part of the CLUMP/EIS review. The review process for Navy actions is important and yet it is under revisions while this LEIS and CLUMP is being updated. *Please complete the revision of the process and provide a description of that for public disclosure* as part of this LEIS review.

60 -Page 4-5: Who is "EPMD"? And what is "NAWSINST 5090.1X"? Since you need to see that document

13.46 as part of this CLUMP description of doing environmental reviews, please provide so that a review of the CLUMP process by the public can be done.

61/13.47 -Page 4-5: This can't be the last page of this document? It seems to be hanging, and there is no ref or appendix section, so...? Is this even the entire draft document???

MISSING DOCUMENTS

The following missing documents are needed for public inspection before a public review of the LEIS can be completed:

Document 25

Pleistocene Foundation

2362 LUMILL ST. RIDGECREST, CA. 93555 760-375-9833
pleistocene@verizon.net
Environmental Research and Education

62/13.2 ***-Integrated Natural Resources Management Plan (INRMP).*** Current reference to a 2000 INRMP is

63/13.3 statutorily inadequate. According to the Sikes Act and the Navy's OPNAVINST 5090.1C, the INRMP shall be reviewed annually, and updated and renewed every 5 years. An INRMP from the past 5 years should be

64/13.16 provided to the public for review, and provided as a final in support of this LEIS. All INRMP's are required to undergo public inspection, per Sikes Act. The current China Lake INRMP violates Sikes Act

65/13.48 requirements. Considering that China Lake is the largest landholding installation of the Navy, and there are expected to be many natural resources, certainly there have been many management plans and actions since

66/13.48 2000 that have taken place. These plans and actions of an updated INRMP need to be provided to the public before the release of the LEIS for public review. The LEIS on page 1-6 lines 2-3 even state that the INRMP is "an element of the CLUMP resources management goals and guidelines." As such, a revised INRMP that is not over 12 years old needs to be provided as part of the CLUMP decision review process.

-Integrated Cultural Resources Management Plan (ICRMP). The Department of Defense's own Instruction 4715.16 requires that the ICMRP shall include coordination of processes with the public and make the draft ICRMP available for review in order to "help ensure proper management of the installation's cultural resources", and mandates DoD work with the public and other interested stakeholders regarding cultural resources on the public's lands. The Navy has never offered up China Lake's ICRMP for public review. Considering the amount of world-renown resources on the installation, release of a public version for review and input should have occurred before the draft LEIS was released. Professional input and review should be considered important to the Navy if they are serious about managing public resources on their lands. The ICRMP is listed in the CLUMP and throughout the LEIS inconsistently as both a 2011 and a 2012 dated version. Which is it? The LEIS refers to Sections of the ICRMP Appendices for the management actions, but those actions are never provided to the public and the associated appendices!

-Revised Biological Opinion (BO). The LEIS routinely quotes requirements from a 1995 Biological Opinion, yet also makes references to a ***revised*** Biological Opinion. That so-called "revised" BO has not been provided to the public, so the public cannot review the proposed management actions and new *guidance in the context of the LEIS operations as presented.*

-Programmatic Agreement (PA) and Section 106 Consultations. The ICRMP requires a PA as part of its finalization with consultations with the state Office of Historic Preservation, the federal Advisory Council on Historic Preservation, and local affiliated tribes. No such document has been provided to the public as *part of this process. Therefore, agreements made under the Section 106 process of National Historic* Preservation Act related to this LEIS is unknown to the public and therefore the public cannot make comment to the LEIS with respect to the PA and Section 106 approved management requirements.

Recommendation

67 The long-term sustainability of NAWSCL requires several significant issues be resolved, including aircraft safety, noise, ground water availability, and drainage to name just a few. All these topics need to be

15.9 addressed in much more detail as well as in a more analytical nature. We highly recommend the Navy retract this public submittal of the LEIS and resubmit the LEIS when appropriate data and analysis has been performed and the necessary documents are available for public inspection. Compliance with NEPA standards will ensure the sustainability of the NAWSCL mission as well as retain both the public and DOD support for the NAWSCL mission.

A. Raymond Kelso

A. Raymond Kelso
Director

Document 25

Pleistocene Foundation

2362 LUMILL ST. RIDGECREST, CA. 93555 760-375-9833
pleistocene@verizon.net
Environmental Research and Education

CC:

Horst G. Greczmiel
Associate Director for NEPA Oversight
Executive of the President, Council on Environmental Quality
Washington DC

Susan Bromm, Director.
EPA, Office of Enforcement and Compliance Assurance (OECA)
Washington, DC

Capt. Dennis A. Lazar.
Commanding Officer, NAWS
China Lake. Ca.

Rear Admiral, Dixon Smith.
Commanding Officer, Navy Region Southwest
San Diego Ca.

James G Kenna, State Director.
Bureau of Land Management California State Office
Sacramento, Ca.

Kim Berns, Lease Renewal Division
Bureau of Land Management,
Washington DC

Carl Symons, Director, Ridgecrest Field Office.
Bureau of Land Management.
Ridgecrest, Ca.

Lori Ford, NEPA, Ridgecrest Field Office
Bureau of Land Management
Ridgecrest Ca.

Kevin McCarthy, Representative, 22nd Congressional District.
Bakersfield Ca.

Jon McQuiston, Kern Co Supervisor.
Bakersfield, Ca.

Lorelei Oviatt, Kern Co. Planning Director.
Bakersfield, Ca.

Shannon Grove, 32nd Assembly District.
Bakersfield, Ca.

Jean Fuller, 18th Senatorial District.
Bakersfield, Ca.

Document 25

Pleistocene Foundation

2362 LUMILL ST. RIDGECREST, CA. 93555 760-375-9833
pleistocene@verizon.net
Environmental Research and Education

CC continued

Diane Feinstein, Senator.
Fresno Ca

Barbara Boxer, Senator.
Fresno Ca.

Ridgecrest City Council.
Ridgecrest, Ca.
Ron Carter, Mayor
Chip Holloway, Mayor Pro Tem
Jerry Taylor, Vice Mayor
Jason Patin, Council Member
Steve Morgon, Council Member

Sophia Mark National Public Lands News
Ridgecrest, Ca.

Sierra Kelso, Pleistocene Foundation
Ventura, Ca.

Tes Whitson, Dead Owls President
Las Vegas, Nv.

CHINALAKE PUBLIC/COMMENTS/029

Document 25A

Pleistocene Foundation

2362 LUMILL ST. RIDGECREST, CA. 93555 760-375-9833
pleistocene@verizon.net
Environmental Research and Education

Feb. 6, 2013

Mr. Beale
NAWS China Lake Land Withdrawal LEIS Project Manager
Naval Facilities Command Southwest Desert IPT
1226 Pacific Highway,
San Diego, Ca. 92132

This letter is in response to the "NOTICE OF RE-OPENING OF THE PUBLIC PERIOD FOR THE DRAFT ENVIRONMENTAL IMPACT STATEMENT (EIS) / LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT (LEIS) FOR RENEWAL OF NAVAL AIR WEAPONS STATION CHINA LAKE PUBLIC LAND WITHDRAWAL"

In the letter we submitted to the Navy on October 23, 2012, we identified several critical missing documents that were needed to allow public review and comment on the EIS to proceed. The notice of January 11, 2013 states that "the Navy is making the additional reference materials in question available for review". Notwithstanding the additional reference materials provided, the Navy still fails to provide the appropriate "key reference materials" supporting the EIS and still continues to fall well-short of its procedural obligations under NEPA statute to provide for a legitimate public inspection and comment period on this EIS. The following critical documents have still not been provided, nor have our previous comments regarding these documents been addressed:

1

13.60

1. An Integrated Natural Resources Management Plan (INRMP) dated within the last five years per OPNAVINST 5090.1C
2. Integrated Cultural Resources Management Plan (ICRMP) per DoDINST4715.16
3. Revised/amended Biological Opinion cited in the EIS (subsequent to the outdated 1995 Biological Opinion)
4. Programmatic Agreement (PA) and Section 106 Consultations required by the ICRMP.
5. Fire Management Plan
6. Comprehensive Land Use Management Plan

Our letter of October 2012 highlighted in detail a number of significant issues with the EIS, including several areas where it does not comply with NEPA, as well as inconsistencies in documents referenced in the EIS. Nothing in the draft EIS has been revised and none of our comments have been addressed. In spite of this second attempt by the Navy to properly provide a public comment period, the draft EIS and supporting documents are still not adequate for public review and inspection. Council of Environmental Quality (CEQ) Regulation Part 1502.9(a) requires that if a public draft EIS document is so "inadequate to preclude a meaningful analysis, the Navy shall prepare and circulate a revised draft of the appropriate portion". This requirement has not been met. How and when will all of our prior comments be addressed? Without the opportunity to review a revised EIS and the additional documents, this period does not meet the requirements for a "reopening" of the EIS for further review purposes.

2/15.29

3

15.29

This EIS is a request by the Navy to Congress for an "additional 25 years" and as such deserves a very thorough and comprehensive evaluation by all interested parties. It is important that the EIS be able to withstand reasonable scrutiny. We still feel strongly, as stated in the summary of our letter of Octobe 2012: "The long-term sustainability of NAWSCL requires several significant issues be resolved, including aircraft safety, noise, ground water availability, and drainage to name just a few. All these topics need to be addressed in much more detail as well as in a more analytical nature. We highly recommend the Navy retract this public submittal of the LEIS and resubmit the LEIS when appropriate data and analysis has been

4/15.30

2/15.31

Document 25A

Pleistocene Foundation

2362 LUMILL ST. RIDGECREST, CA. 93555 760-375-9833
pleistocene@verizon.net
Environmental Research and Education

performed and the necessary documents are available for public inspection. Compliance with NEPA standards will ensure the sustainability of the NAWSCL mission as well as retain both the public and DOD support for the NAWSCL mission."

A. Raymond Kelso

A. R. Kelso

Director

Enclosure: Letter to Mr. Beale submitted Oct 23, 2012 regarding comments on the Draft EIS/LEIS for NAWSCL Public Land Withdrawal, Aug 2012

CC:

Horst G. Greczmiel
Associate Director for NEPA Oversight
Executive of the President, Council on Environmental Quality
722 Jackson Place, NW
Washington DC 20503

Susan Bromm, Director
EPA, Office of Federal Activities
1200 Pennsylvania Ave.
Washington, DC 20460

Capt. Dennis A. Lazar
Commanding Officer, NAWS
1 Administrative Circle
China Lake, Ca. 93555

Rear Admiral, Dixon Smith
Commanding Officer, Navy Region Southwest
937 N. Harbor Dr.
San Diego Ca. 92131

Kevin McCarthy, Representative, 22nd Congressional District
Empire Dr. 150
Bakersfield Ca. 93309

Mick Gleason, Kern Co Supervisor
400 N. China Lake Blvd.
Ridgecrest, Ca. 93555

Shannon Grove, 32nd Assembly District
4900 California Ave. Suite #100-B
Bakersfield, Ca. 93309

Document 25A

Pleistocene Foundation

2362 LUMILL ST. RIDGECREST, CA. 93555 760-375-9833
pleistocene@verizon.net
Environmental Research and Education

Jean Fuller, 18th Senatorial District
State Capitol, Rm 306
Sacramento, Ca. 95814

Barbara Boxer, Senator
333 Hart Office Bldg
Washington DC 20510

Dianne Feinstein, Senator
112 Hart Office Bldg.,
Washington DC 20510

Ridgecrest City Council
100 E. California Ave.
Ridgecrest, Ca. 93555

Ray Mabus, Secretary of the Navy
1000 Navy Pentagon
Washing, D. C. 20350

Sierra Kelso, Pleistocene Foundation,
319 Crocker Ave
Ventura, Ca. 93004

Document 26

[redacted]

September 24, 2012

Mr. Gene Beale
NAWSCL Land Withdrawal LEIS Project Manager
Naval Facilities Southwest Desert IPT
1220 Pacific Highway
San Diego, CA 92132-5178

Dear Sir:

I am a local contractor in Ridgecrest, CA. I have built homes in various parts of both the City of Ridgecrest and neighboring Kern County. I have read newspaper articles during the past few years indicating the City has denied developer's projects based upon the Navy stating that certain residential projects were incompatible with the Navy due to Navy safety concerns. Reading the draft EIS I get no indication what areas of Ridgecrest and neighboring Kern County are safe for development and what areas are unsafe. The statement in the EIS to the effect that there are no safety problems is not helpful to contractors or developers, since the City of Ridgecrest, based upon communication with Navy personnel, currently believes there are areas inside the incorporated limits that are not safe. Specifically, what areas within Ridgecrest are not safe for housing development? What is the Navy doing to make these areas safe? What is the Navy doing to alleviate the City of Ridgecrest's housing development concerns in areas that are safe? A definitive answer to these questions is needed.

1

10.31

Sincerely,

Steven Porter

Steven Porter

CHINALAKE PUBLIC/COMMENTS/030

[redacted]
September 12, 2012

NAWS China Lake Land Withdrawal LEIS Project Manager
Naval Facilities Southwest Desert IPT
1220 Pacific Highway, San Diego, CA 92132-5178

Dear Mr. Beale

1 I thank you for this opportunity to comment on the draft NAWSCL Land Withdrawal LEIS. Many of the comments
10.1 below are similar to comments I provided as inputs for the Notice of Intent. Much of the LEIS reads like a novel more than a scientific work with analytic data supporting conclusions. There is lack of discussion regarding runway utilization, lack of mitigation for noise and safety risk, and unresolved conflicts between government documents.

2 1. General comment. The large number of safety related comments below is due largely to the inconsistent safety
10.2 program of NAWSCL. The 2004 EIS stated there were no safety issues regarding airfield departures. The 2007 AICUZ states there is a large privately owned corridor that is subject to aircraft incidents (e.g., equipment drops, crashes, etc.). NAWSCL convinced the City of Ridgecrest in 2009 to downzone hundreds of acres of land to mitigate a safety impact resulting from aircraft departing the NAWSCL airfield. According to the Ridgecrest EIR, the safety impact remains "significant". Now the 2011 LEIS once again states there is no safety impact. The LEIS fails entirely to mention the AICUZ MIA corridor that is subject to inherent safety risk or the yet unmitigated risk documented in the Ridgecrest EIR. Such unresolved conflicts raise a lot of questions the LEIS needs to answer. NAWSCL needs to have a real safety program that doesn't rely on the city between EIS updates.

3 2. Page 2-43. Adopted Not Defined. The discussion regarding the China Lake Overlay is misleading at best. The City
10.3 of Ridgecrest adopted the NAWSCL MIA corridor without modification from the 2007 AICUZ. The overlay was not defined by the city. The city relied on NAWSCL to determine the MIA boundary, i.e., the location of inherent aircraft safety risk. The MIA is a Navy creation. The LEIS is misleading, and the record needs to be corrected.

4 3. Page 3.10-4. Flight Routes/Corridors. This page states, "Pilots are also required to exercise caution to remain
10.4 within approved flight routes and holding patterns". This statement is made with no quantifiable data and therefore is meaningless. Both the 2007 AICUZ on page 6-4 and the 2011 AICUZ on page 3-9 state the actual route flown is dependent upon wind conditions, temperature, airspeed, and mission loading. The LEIS should quantify the corridor, in addition to the route, and the width of the corridor depending upon applicable variables. The LEIS should state whether reduced high temperature performance of a heavily loaded aircraft (as discussed in the 2007
5/10.5 AICUZ) is going to impact the width of the departure corridor. The 2007 AICUZ defines an MIA corridor, three miles wide, to account for all the variations that occur during aircraft departure. The safety benefit achieved by a pilot
6/10.6 staying in a corridor that is 15,000 feet wide is arguable. The LEIS needs to show how departure routes have been designed to minimize noise impact and safety impact.

7 4. Page 3.10-4. Flight Routes/Corridors. The NAWSCL Commanding Officer, Captain M. Gleason, indicated during a
10.7 2007 AICUZ briefing to the Ridgecrest City Council that much of the variation in departure routes is due to 4-ship departures where the 2nd, 3rd, and 4th aircraft follow the lead aircraft rather than the assigned flight corridor. This is particularly true when the 4-ship departure is using Runway 14. The LEIS needs to quantify the corridor width
8 required to support a 4-ship departure as well as how often the procedure occurs. Requiring all pilots depart on the
10.8 assigned departure route may be significant mitigation for both noise and safety issues. On most days the 4-ship departure should have no trouble keeping the prior aircraft either in sight or in view of sensors if it followed the
9 assigned corridor. This would reduce the safety risk and noise levels for thousands of acres of property. How
10.9 critical is the 4-ship departure to the RDAT&E mission of NAWSCL? Would this new procedure create a negative safety impact? The LEIS needs to address the tradeoffs.

10 5. Page 3.10-5. APZ-II for Runway 14. This page of the LEIS provides a description of an APZ-II. The APZ-II
10.10 description implies an APZ-II is not necessary if there is no APZ-I. Runway 14 does not cross the threshold for requiring an APZ-I. However, the controlling document, OPNAVINSTR 11010.36C, states that APZ-II may still be used if an analysis indicates a need for it. Based upon the 2011 AICUZ projection of 2,500 departures and almost 6,000 total operations, it is time for such an analysis. The LEIS should state if an analysis to determine the need for an APZ-II has ever been performed, the outcome of the analysis if performed, and what factors would trigger the need for an analysis in the future.

11 6. Page 4.2-3. Noise Levels Exceeded. This page acknowledges that aircraft flight events under the Proposed Action
2.1 would exceed noise compatibility thresholds in the communities of China Lake Acres and Ridgecrest. The risk mitigation presented later in section 4.2.2.2 is not applicable for mitigating this significant noise environment in developed areas since it relies on land use management. Both page 4.1-6 and page 4.2-11 of the draft LEIS acknowledge mitigation planned by the NAWSCL is ineffective. When proposed noise levels exceed noise compatibility thresholds, the LEIS has an obligation to demonstrate due diligence. No approaches to mitigate the excessive noise were documented even though multiple mitigation approaches are available. Noise can be a major

11 problem in any community, especially at the levels projected in the LEIS. The noise levels exceed 70 dB in northern
2.1 Ridgecrest. There is roughly ten times the number of people exposed to 70 dB noise off base as on base. Noise mitigation needs to take precedence over convenience to the Navy. Exceeding a noise compatibility threshold should only be tolerated based up a significant safety risk or an even greater operational constraint. The 2011 AICUZ states on page B-5, "residential use is discouraged in CNEL 65 to 69 and strongly discouraged in CNEL 70 to 74". This statement was taken directly from OPNAVINST 11010.36C, the requirements document for Navy AICUZ reports. The 2011 AICUZ states on page 5-3 that a 5 dB increase in noise level is quite noticeable. Page 3.2-1 of the LEIS states that a 5 dB increase is a readily perceptible change. The increase in noise levels between the 2007 AICUZ projections and the 2011 AICUZ projections is 5 dB or more in some places including northern Ridgecrest
12 where the projected noise was already high. This is illustrated well in Figure 5-4 of the 2011 AICUZ. NAWSCL
2.2 acknowledges creating an adverse impact, but is doing nothing to mitigate the impact. That is not performing due diligence. There is no analytical basis for stating this adverse impact is unavoidable. NAWSCL would energetically fight any residential land development in an area above 70 dB, or at minimum, insist on costly construction enhancements that would be of no value outdoors. NAWSCL needs to expend the same energy protecting the existing developed land.

13 7. Page 4.2-3. Noise Levels Exceeded. The LEIS departure routes can be seen in Figure 3-1 of the 2011 AICUZ. The
2.3 LEIS needs to investigate noise mitigation resulting from moving all departures to the center of the Navy controlled departure corridor (see route 2102). This would move the peak of noise environment closer to Navy controlled land and reduce the noise over populated areas. It is certainly true that not all pilots will be able to depart down the center of the Navy owned departure corridor under all environmental conditions. However, if they are told to not fly the center of the corridor, it is guaranteed that the departing aircraft will have a greater dispersion, and some will be dispersed onto private land. In particular, routes 2101, 1402, and 2603 will be over private land as often as they are over Navy land. The intended dispersion of the departure routes does not appear to have any significant benefit and does have a public detriment. Page 3-9 of the 2011 AICUZ indicates that the departure routes were changed from the 2007 AICUZ to the 2011 AICUZ to "reflect greater dispersion of departure traffic in order to more
14 accurately reflect the way pilots fly". Since no data was given regarding the utilization of the twelve different routes,
2.4 it is impossible to determine what was modeled or what the impact might be. However, it is important to remember that noise mitigation is more important than minor operational flexibility. Page 3.10-4 of the LEIS states, "Pilots are required to exercise caution to remain within approved flight routes and holding patterns." The 2011 AICUZ appears to say the pilots don't take their instructions very seriously. The 2007 AICUZ had two routes. The 2011 AICUZ has five routes. The LEIS needs to justify increasing adverse noise levels on private land for no real benefit.

15 8. Page 4.2-3. Noise Levels Exceeded. Route 1403 is on private land for the majority of its departure. While this
2.5 has significant safety issues, the noise issue is not insignificant. Comparing the 2007 AICUZ route with the 2011 AICUZ route it is apparent that the 2007 route continued west to avoid as much populated area as possible. Intentionally turning south as is done in the 2011 route is obviously going to push the AICUZ noise footprint further east into the populated areas with no apparent benefit to the Navy. The benefit to NAWSCL of modifying route 1403 between the 2007 AICUZ and 2011 AICUZ versus the harm to the public needs to be justified by the LEIS.

16 9. Page 4.2-3. Noise Levels Exceeded. Neither the 2011 AICUZ or the LEIS discuss the basic need for route 1403.
2.6 Clearly, the best way to handle the resulting noise problem would be for the aircraft utilizing route 1403 to be switched to route 1401. I assume the reason for the route is due to degraded performance of a heavily loaded aircraft on a hot summer day as described in the 2007 AICUZ. If that is not the case NAWSCL should just eliminate it.
17 Even with summer temperatures and the wind down Runway 14, the aircraft could still utilize route 1401 if the
2.7 flight was planned for the morning. If the flight is not critical, the flight could be postponed until the prevailing wind is down Runway 21. The LEIS should develop criteria regarding the criticality of a particular flight before a
18/2.8 degraded performance aircraft is allowed to depart over private land. Neither the 2011 AICUZ or the LEIS give an indication regarding the frequency of use for route 1403. Utilization of route 1403 requires that multiple factors line up. 1) An aircraft susceptible to degraded performance is the only one that can be used. 2) The aircraft is heavily loaded. 3) The wind is in the direction of Runway 14. 4) The flight cannot be made in the morning, and 5) the flight is not critical to delay one day. Therefore, the number of departures using route 1403 should be very few. Looking at the 2011 AICUZ footprint the assumption of relatively few events cannot be verified. In fact, it appears that it may be a key contributor to the noise levels in northern Ridgecrest. The LEIS needs to provide a thorough treatment of route 1403 regarding benefit to NAWSCL versus detriment to the public. A detailed discussion of event frequency needs to be included.

19 10. Page 4.2-3. Noise Levels Exceeded. Neither the 2011 AICUZ or the LEIS contain a good discussion relative to the
2.9 prevailing winds and the utilization of Runway 21 versus Runway 14. Previous AICUZ reports have Runway 14 being utilized roughly 10% of the time. The 2011 AICUZ has Runway 14 being utilized almost 25% of the time. Based upon data taken from the 2011 AICUZ, the 2007 AICUZ projected Runway 14 to be used just over one thousand times. Now, the 2011 AICUZ projects Runway 14 to be used just over twenty-five hundred times. That is well over double the previous projected utilization. That has to have a dramatic effect on the noise levels in northern Ridgecrest. Why has this dramatic change in runway utilization been adopted? How much of the change

19 is the result of a change to the prevailing winds, and how much is the result of other factors? Page 3-8 of the 2011
2.9 AICUZ states, "Runway 14 is used when winds are out of the southeast, or when Runway 21 is not available". The basis for the projected departure frequency of both Runway 14 and Runway 21 needs to be reviewed. The review should include actual departure data over the last twenty years. A thorough discussion of this subject needs to be included in the LEIS. Decreased utilization of Runway 14 would move the noise contours north and west of the populated areas and contain more of the noise over Navy owned land. The LEIS needs to justify increasing the already adverse noise impact over private land.

20 11. Page 4.2-3 Noise Levels Exceeded. The 2011 AICUZ departure routes branch out east or west less than three
2.10 miles south of Inyokern road (see Fig. 3.1). Maintaining the aircraft route south for an additional 10 or 12 seconds would put the aircraft more than 6 miles south of Inyokern Road and south of the majority of the city. This is important to people who live or own property in the south end of town. The LEIS is short on any discussion regarding Navy desire to protect property values. While it is understandable the Navy is primarily interested in their own operations, it is would behoove the Navy to also acknowledge the mutual interests of the public. The Navy and the local citizens do have to work together. NAWSCL should modify the routes to fly further south before turning east or west unless there is quantifiable reduction in operational capability.

21 12. Page 4.2-3. Noise Levels Exceeded. It was mentioned in one of the above comments that the utilization of route
2.11 1403 is not defined. The same thing can be said for all routes modeled in the 2011 AICUZ (see 2011 AICUZ Fig. 3.1). Lack of information on all routes (12 or 36) makes it is impossible to understand the modeling behind the AICUZ footprint. The reader should not have to make assumptions. The LEIS needs to include all the data that the AICUZ report left out so that the results and conclusions can be understood. The LEIS should not only describe the allocation of aircraft to routes, but also the reasoning behind the allocation.

22 13. Page 4.2-3. Noise Levels Exceeded. The 2007 AICUZ report documented two specific procedures designed to
2.12 reduce public noise. One of those procedures (see page 5-14) was called the Runway 21 Noise Abatement Procedure. To summarize, departures from Runway 21 would use low power settings up to 2.5 miles away from the airfield, and 25 percent of aircraft departures continue straight out from the runway to avoid turning over populated areas. If this procedure was helpful for mitigation in the 2007 AICUZ, the LEIS needs to explain why it would not be equally useable now. The F-35 is having a difficult time gaining acceptance in eastern state towns. Modified flight profiles have been created to reduce noise. Why has NAWSCL decided to ignore the problem? Numerous opportunities exist whereby NAWSCL could demonstrate initiative relative to noise mitigation. NAWSCL needs to perform due diligence.

23 The 2007 AICUZ report also documented a special Nighttime Noise Abatement Procedure. To summarize, nighttime
2.13 departures are routed, to the extent possible, to the northwest, north, or northeast to avoid inhabited areas. Arrivals are routed from the northwest, north, and northeast for straight in, full stop landings, etc. If this procedure was helpful for mitigation in the 2007 AICUZ, the LEIS needs to explain why it would not work now.

24 14. Page 4.2-3. Noise Levels Exceeded. Ridgecrest's location south of the NAWSCL airfield is an ideal location to
2.14 avoid noise impacts from departing aircraft. Straight out departures from the two primary departure runways, Runway 21 and Runway 14, skirt the city borders and the departure noise has little or no impact on residents. Runway 14 departures, especially, would obtain a significant benefit from straight out departures along the TACAN route. Almost all noise in the northern part of Ridgecrest would be eliminated. The noise environment would move east of the population centers. The older homes in the northern part of the town would not have to be renovated in order to tolerate the NAWSCL proposed noise levels. This one mitigation approach would keep property values from deteriorating. The LEIS needs to study the down side of this approach and document very specifically any safety or operational limitation imposed by this approach. All detrimental impacts need to be quantified and prioritized against the noise and safety benefit to the local civilians. In other words, saying it won't work is not acceptable. The LEIS needs to demonstrate with sound arguments why it will not work.

25 15. Page 4.2-3. Noise Levels Exceeded. The projected number of total runway departures drives noise levels. The
2.15 AICUZ report has to be developed based upon projections; however, those projections need to be based upon reasonable and logical data if the results of the report are to be valid. Both the 2004 EIS and the current 2011 LEIS have asked for increases in operational tempo. The LEIS needs to document the past data on which the future projections are based and provide some logic regarding projected growth based on that data, i.e., a standard needs assessment. Does the total number of departures need to increase to the level proposed, and specifically, does the number of departures from Runway 14 need to increase to twenty-five hundred?

26 16. Page 4.2.10. Mitigation Measures Ineffective. The mitigation measures proposed by the Navy in section 4.2.2.2
2.16 appear to be limited to land use management efforts. The first mitigation measure is "compliance with the land use management recommendations of the 2011 AICUZ update." The 2011 AICUZ Update is a 132-page document. No section or paragraph of the document specifically addresses land management for the purpose of mitigating noise. Most of the land management paragraphs address the combination of noise and safety mitigation in both the AICUZ footprint and Navy MIA. This draft LEIS does not address the Navy MIA relative to noise or at all. Safety mitigation should be addressed in section 4.10. The noise mitigation measures of paragraph 4.2.2.2 need to be specific to noise

26 mitigation or need to reference specific sections or paragraphs of the 2011 AICUZ Update that specifically address
2.16 mitigation of noise levels. According to figure 4.2-1, page 4.2-4, there is a significant amount of land above the 70 dB CNEL contour. Most northern Ridgecrest is developed or has been parceled ready for development. The region has many multi-family residences and has a high population density. There are also many repair shops and retail stores in the area. The region includes three mobile home parks that are wholly or partially above the 70 dB noise level. It is irresponsible to subject mobile homes to the proposed noise levels. The area will continue to grow with multi-family residences. For this area and for other areas that exceed the Navy's Noise Zone II threshold, provide the specific noise level reduction expected to be achieved by each of the mitigation measures specified in section
27 4.2.2.2. Land use management is a useful tool, but it was never intended to replace real mitigation. The LEIS needs
2.17 to mitigate increased noise levels, or the Navy should pay compensation to the landowners for diminished use of property. The verbiage on LEIS page 3.2-9 regarding residential construction or development be discouraged is a clear case of talking

28 17. Page 4.10-2. History changes. This page of the LEIS states that based upon historic records, it is expected that
10.11 any off-station incident would occur in proximity to NAWSCL land on adjacent undeveloped public land. It also states that if a mishap were to occur it would occur over an unpopulated area. Both of those statements may be true if the aircraft departures were all from Runway 21 and the departure route took them over the center of the Navy owned corridor west of Ridgecrest. The 2011 AICUZ has significantly increased the number of departures from Runway 14. Historical data is no longer valid. A departure failure from Runway 14 will create a crash site in northern Ridgecrest. Departures from Runway 14 turn westward going straight west prior to turning south. The crash site location will depend upon how far into the westward turn the aircraft is when it fails. Most of northern Ridgecrest is developed and highly populated. The crash site could be a church, a theater, a hospital or any number of single or multi-family residences. The LEIS needs to provide a quantitative analysis rather than an invalid historical reference. The 2011 AICUZ states on page 3-8 that Runway 14 is used when Runway 21 is not available. If a crash were to occur while Runway 21 is not available, the odds of it occurring over a populated area are high.

29/10.12 18. Page 4.10-2. Safety Risk. The crash near Pailer School was not on public land. According to the incident report,
30/10.13 the pilot avoided the school in his flight path, crashed, and slid 534 feet into a road embankment south of the school.
31/10.14 The LEIS needs to clarify the meaning of "proximity" and "adjacent"; i.e., one-quarter mile, one mile, etc. A plan that acknowledges a likely crash or stores drop off-installation land, developed or undeveloped, is not a safety plan. The Navy should purchase all private parcels where the departure safety risk is not mitigated to less than significant.

32 19. Page 4.10-3. Safety Risk. The LEIS states Alternative 1 will not create a significant safety risk. The statement is
10.15 overly simplistic and is made based upon generalizations without analytical basis. Findings should be based upon data. Accidents and store drops are rare; but what has NAWSCL done to insure when one does happen it will not happen over existing residential areas, a school, or hospital? The LEIS statement is in total conflict with the 2007 AICUZ report. The 2011 AICUZ report does not address this issue. Page 6-4 of the 2007 AICUZ report states there is an inherent risk of aircraft incidents (e.g., crashes, equipment drops, etc.) occurring within the departure corridor.
33 The boundary of the corridor is what the report defines as the Navy MIA. On the west side of Ridgecrest the MIA
10.16 corridor is three miles wide and five miles long. The report further states the Navy encourages limiting the number of dwellings or people in the MIA, corridor as a method of reducing the severity of aircraft accidents. That approach as a safety program is clearly flawed since it would not prevent aircraft hitting the existing school in the departure corridor. Departing aircraft need to fly around Pailer Elementary, not over it. NAWSCL should mitigate the risk by 1) improved aircraft safety, or 2) the aircraft using corridors not over or near objects on the ground. Clearly, something has changed since the release of the 2007 AICUZ. The LEIS needs to provide analytic data for the
34 dramatic change. Does an MIA still exist from a safety perspective? Where is it located? If aircraft departure over
10.17 flight is still a risk, route 1403 that over flies a significant amount of private land is problematic. Routes 2101, 2603 and 1402 should move to route 2102. The LEIS needs to be clear regarding the inherent aircraft risk. If there is
35/10.18 inherent risk, what has the Navy done to insure aircraft do not depart over incorporated Ridgecrest or populated
36 areas? When was it done?
10.19

37 20. Page 4.10-3. Safety Risk. Runway 21 departure safety risk can be minimized simply by flying down the center
10.20 of the Navy departure corridor (see route 2102). As long as the aircraft stays near the center of the departure corridor, the crash footprint will be on Navy property. The inherent risk of Runway 14 departures is more complicated than Runway 21 departures. If the aircraft fails during the first few seconds of flight, the crash site will end up in northern Ridgecrest. The crash site will be on either side of the ground track established by the aircraft velocity vector at aircraft failure. If the aircraft successfully attains a westward track it can eventually turn down the centerline of the Navy corridor. However, if the aircraft fails on the westward leg the crash will be either north or south of Inyokern Road. If the aircraft fails during the turn south, the crash site will be in China Lake Acres. The faster the aircraft is traveling and the higher it is when it fails increases the crash footprint. The easiest way to confine the crash footprint to a small area would be to force all Runway 14 departures to perform a straight out
38 departure. The LEIS should do a crash footprint analysis to establish the tradeoffs and determine the proper route.
10.22 The message here is that even if the aircraft manages to stay in its assigned corridor prior to aircraft failure, the crash can easily be on highly populated land. What analysis has NAWSCL performed to determine what areas of

CHINALAKE PUBLIC/COMMENTS/031

Ridgecrest or China Lake Acres are most at risk, and what has been done to mitigate that risk? The LEIS needs to address the unique issues of Runway 14.

39 21. Page 4.10-3. Safety Risk. The aircraft flown from NAWSCL are essentially the same aircraft flown from Oceana Naval Air Station. In April 2012, an F/A-18 fighter jet crashed two miles off the end of the runway destroying an entire housing complex of multi-family residences. Fortunately, no one was killed. That same crash could have occurred at NAWSCL. Accidents do happen, and just one crash can cause multiple fatalities. NAWSCL departures from Runway 21 provide for better public safety than Oceana departures. Current Runway 14 departures at
10.23 NAWSCL are in one major aspect worse than departures at Oceana. The crash footprint in Oceana is limited due to the straight out departure. Departures on Runway 14 at NAWSCL make two large turns, ninety degrees or larger. The turns create a very large crash footprint. Minimizing the usage of Runway 14 would be appropriate mitigation. Unfortunately, NAWSCL is increasing Runway 14 usage for no apparent reason. The LEIS needs to explain why the projected use of Runway 14 is increasing, and what operational benefit would be lost if the usage was decreased. An even better mitigation from a standpoint of public safety would be to use straight out departures from Runway 14. The crash footprint is almost entirely on Navy property and uninhabited San Bernardino property. The LEIS should explain why straight out departures couldn't be performed.

40 22. Page 4.10-3. Safety Risk. The LEIS claims the Proposed Action would not pose a safety risk in total conflict with the City of Ridgecrest EIR finding that states aircraft departing from NAWSCL create a "significant" risk to the public. (See enclosure 1.) The lead environmental engineer for NAWS China Lake, Mr. John O'Gara, was a member of
10.24 the General Plan Advisory Committee leading the GP and the EIR effort, and he was instrumental in all findings related to the city and base interaction. Both Mr. O'Gara and the NAWSCL Deputy Commander were at the GP and EIR adoption hearing in December 2009 where the finding was hotly debated between city councilmen and city staff versus the public. Clearly, NAWSCL agreed with the EIR finding of a "significant" risk at the time of the EIR adoption. The Ridgecrest EIR actually states **the risk cannot be mitigated**. The LEIS needs to clearly specify what risk mitigation was performed between the adoption of the Ridgecrest EIR and the LEIS finding of no significant risk.

41 Mr. O'Gara was also instrumental in establishing all EIR mitigation measures relative to potential Navy risks. As a consequence of the Navy generated safety risk hundreds of acres of valuable land was downzoned to rural residential, i.e., 40,000 square feet per residence. Six months prior to the adoption of the Ridgecrest EIR, Mr. O'Gara
10.25 had written an email (see enclosure 2) to the Ridgecrest City Planner giving a Navy go ahead to a revised development project. In part, the email states the project is compatible with the NAWSCL mission because it meets the goal of 40,000 square feet per residence. The LEIS should explain what criteria NAWSCL was using to establish the 40,000 square foot parcel size at that location as being compatible with their mission. The LEIS should also state what the Navy was doing while the City of Ridgecrest was attempting to mitigate the Navy safety risk; which the city admitted they could not fully mitigate.

42 23. The Ridgecrest EIR did have the caveat that if and when a Navy proposed movement of the departure routes takes place, some or all of the safety risk would be eliminated. A letter from the Office of the Secretary of the Navy (see enclosure 3) I received just two days after the Ridgecrest EIR was approved states that the proposed movement
10.26 of the flight tracks, known as the Consolidated Departure Alternative, had been incorporated into NAWSCL flight ops since release of the 2007 AICUZ study. The OSN letter states the Ridgecrest finding of a significant risk was not relevant since the corridors had been moved in 2007. The LEIS should state the real timeline for the movement of departure routes and what risk was mitigated as a result. The LEIS also needs to state the size of the MIA after the routes were moved, and how the size was established.

43 24. Page 4.10-3. Safety Risk. The 2011 AICUZ does not agree with the LEIS finding of no safety risk. Page IV of the
10.27 2011 AICUZ recommends the city and county, "identify appropriate densities of new residential development and minimize sensitive types of land use within flight corridors and areas of increased risk." Has NAWSCL given the city and county densities that mitigate the assumed risk? The LEIS should specify what densities are appropriate under
44 what departure conditions. The "area of increased risk" other than flight corridors needs clarification. Has the Navy
10.28 recently given the city and county a map of "areas of increased risk", clearly elaborating the reason for the increased risk? The AICUZ seems obsessed with the flight corridor being a safety risk. The corridor identifies the location of the airplane if it does **not** fail. **The crash footprint is much larger than the corridor.** Has NAWSCL given the city
45 analytic based information stating where Navy airplanes would crash if it failed at points along the corridor? Has the Navy attempted to move the departure corridors and the crash footprints off private land? Departure route 14DA is a good example! The 2011 AICUZ on page V requests the city and county require site-specific evaluations
10.29 for "an area identified as impacted by noise or safety concerns". Has NAWSCL told the city recently where it has "safety concerns" as well as the basis for those safety concerns? Has the Navy provided proposed criteria to be used in the site-specific evaluation? The LEIS should be very clear where the safety concerns exist. The same page of the AICUZ requests the city notify realtors, buyers, etc., of flight safety risk inside the Navy MIA. To what flight safety risk is the AICUZ alluding? What is the benefit of the notifications? Navy helicopters fly down China Lake Boulevard, but no notification is requested for that. Why the concern about the Navy MIA? The LEIS needs to provide an analytic foundation to the requests made by the 2011 AICUZ. In other words, what does all this verbiage really

45/10.29 mean? Is there a risk, or not? A real safety analysis needs to be performed. If the risk cannot be mitigated to less than significant, the Navy should purchase the property at risk at market value.

46 25. General. Overall Confusion. Has the Navy now convinced the City of Ridgecrest that aircraft departures are creating no significant risk? Is the city now willing to reduce the 40,000 square foot zoning it imposed due to the safety risk to a zoning compatible with development, say R-1, 6,000 square feet per residence? These are critical questions that need to be answered by the LEIS. Mitigation should not come at the expense of private property rights. The Navy, not the private landowners, is responsible for Navy operating safety. The 2004 EIS stated that there was no significant risk imposed as a result of departures from the NAWSCL airfield. The 2007 AICUZ report stated that aircraft departures from the NAWSCL airfield pose an inherent safety risk in the MIA corridor that is almost three miles wide and five miles long on the west side of Ridgecrest. The City of Ridgecrest 2009 GP Update and associated EIR also concluded that NAWSCL aircraft were creating a "significant" safety risk. The city rezoned hundreds of acres of land to mitigate the risk over the strong objections of the landowners. This area includes a public school. Now the current LEIS, using the same information as the Ridgecrest EIR, states there is no significant
10.30 safety risk. What or who is the public to believe? At best there has clearly been a lack of communications among people the public trusts to protect the interests of the taxpayer and landowner. At worse, vital information has been withheld intentionally to push an agenda. Private citizens have had no input into any AICUZ discussion, and private property rights have been ignored. The EIS is the document that should identify potential impacts and certify the impact as either significant of less than significant. Currently, the AICUZ contradicts the EIS without explanation. The city council has been given impassioned pleas by local Navy management to avoid putting the community's relationship with the Navy at risk and perhaps put our economy at risk. Safety impacts need a scientific basis. If the LEIS analysis indicates the significance of the impact is conditional, the LEIS should be clear regarding under what conditions the impact is either less than significant or significant. The AICUZ should not be a document for manipulating local investors and property owners. City council members should not have to suffer bureaucrats giving bare facts regarding what might happen to the town if they approve a project. The LEIS should be the official statement of fact regarding risk. It needs to be factual and objective.

47 26. General. More Alternatives. NEPA requires NAWSCL to rigorously explore and objectively evaluate all reasonable alternatives. From a practical noise viewpoint there is no difference between Alternative 1 and Alternative 2. They are essentially the same plan of action. Looking at the AICUZ footprints in Figure 4.2-1 of the LEIS, the two alternatives are almost identical. Therefore NAWSCL has only the Proposed Action and the no action alternative. Both Alternative 1 and Alternative 2 contain adverse environmental impacts that are easily avoidable. I propose two additional alternatives be studied to provide real options.

The first new alternative, Alternative 4, is essentially the preferred action relative to most characteristics, but the airfield tempo is determined by establishing departure routes and runway utilization methodology that limits the 70 dB noise contour to extend no further south than Inyokern road. Proper out of box thinking should keep the tempo from falling lower than that of the Proposed Action. The LEIS does not give any information regarding the way the
14.1 25% tempo reduction was performed between Alternative 1 and Alternative 2, but it appears to be a uniform reduction over all aircraft and all runways. Intelligent decisions relative to moving departure routes to the center of the NAWSCL departure corridor, shifting Runway 14 utilization to Runway 21, and reducing to use of departure route 14DA to absolute mission critical events should minimize any significant decrease in the desired tempo.

The second new alternative, Alternative 5, is essentially the Proposed Action relative to most characteristics, but western aircraft departure routes pass through the center of the NAWSCL departure corridor, and Runway 14 departures fly straight out on the TACAN route. This will greatly mitigate both the noise levels and accident exposure to populated areas, and allow for yet additional flight tempo in the future.

Sincerely,

Stan Rajtora

Stan Rajtora, PhD

cc: Jon McQuiston, County Supervisor
Loredel Oviatt, Kern County Planning Director
Shannon Grove, 32nd Assembly District
Jean Fuller, 18th Senatorial District
Kevin McCarthy, 22nd Congressional District
Dianne Feinstein, Senator
Barbara Boxer, Senator
Ridgecrest City Council
Secretary of the Navy

Enclosure 1

City of Ridgecrest

Environmental Impact Report Excerpt

- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or environment;
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands; or
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Impact 3.10-1: The Proposed Project could result in development located within an airport land use plan or within two miles of a public or private airstrip that could result in a safety hazard for people residing or working in the Planning Area.

Impact Summary

Level of Significance Before Mitigation: ***Potentially Significant***
Required Additional Policies or Mitigation Measures: ***No Additional Mitigation is Currently Available***
Resultant Level of Significance: ***Significant and Unavoidable***

Impact Analysis

As previously described, flight departure tracks at NAWS China Lake traverse through the Planning Area, in particular along the western edge of the City. All Navy and Air Force runway facilities have a set of aircraft safety zones designated at each end of the runway. These zones are referred to as the Clear Zone (CZ), Accident Potential Zone I (APZ I) and Accident Potential Zone II (APZ II). Each zone was developed based on a statistical review of aircraft accidents. The Navy and Air Force provide guidance on land uses considered to be consistent within these zones as part of their AICUZ studies. All of the aircraft safety zones related to runways at China Lake fall within the installation's boundaries; therefore, no aircraft safety issues associated with these zones have been identified. Additionally, as part of the Navy's AICUZ study for NAWS China Lake, the Navy is considering a potential consolidation and westward shift of the departure flight routes in the interest of reducing potential safety risks. Currently, this change has not occurred.

Overall, the intent of the Proposed Project is to ensure that existing and future land uses function without imposing a nuisance, hazard, or unhealthy condition upon adjacent uses. Specific policies included as part of the Proposed Project that would minimize conflicts with local airports are summarized below by general plan element. The draft Military Compatibility Element provides a number of policies that establish requirements for acquisition easements, suggest compatibility with Airport Land Use Compatibility Plans, implementation of the China Lake AICUZ Recommendations, and provisions for lighting standards, including buffering, screening, controls and performance standards. Two policies (MIL 3.1 through 3.8). This element also includes a number of policies designed to address military flight patterns and operations that could affect the Planning Area, including MIL 1.3 "Development Constraints" and MIL 2.6 "Exclusive Rezoning of Military Flight

CHINALAKE PUBLIC/COMMENTS/032

Document 27

Patterns". The draft Land Use Element also includes goals and policies aimed at enhancing land use compatibility between China Lake and property in the City of Ridgecrest and to protect public health and safety (See Goal LU-7 "Military Compatibility and Policy LU-7.1 "Military Influence Area (MIA) Overlay"). However, even with implementation of the below mentioned policies and implementation measures, this impact is considered ***potentially significant***.

Military Sustainability and Land Use Elements

Policies and implementation measures designed to minimize the risk of City residents and property associated with aircraft and operations at NAWS China Lake include the following:

MIL-1.3 Development Constraints	MIL-3.4 NAWS China Lake AICUZ Recommendations
MIL-2.3 Development Review	MIL-3.5 Vertical Obstructions
MIL-2.5 Military Involvement and Review Process	MIL-3.6 Cellular Tower Collocations/Consolidation
MIL-2.6 Evaluate Rerouting of Military Flight Patterns	MIL-3.7 Outdoor Lighting
MIL-3.1 Aviation Easements	MIL-3.8 Lighting
MIL-3.2 Major Plan Coordination with Military	LU-7.1 Military Influence Area (MIA) Overlay
MIL-3.3 Airport Land Use Compatibility Plan	Implementation Measures ML #1.0 to #12.0

Required Additional Policies or Mitigation Measures

As stated above, the City will implement a variety of policies and implementation measures designed to address land use and safety issues associated with development near NAWS China Lake. However, aircraft departures and operations could still impose safety hazards to residents in the Planning Area, in particular any additional development occurring along the western portion of the Planning Area. As a result, this impact remains ***significant***. No additional policies or feasible mitigation is currently available. Although, the City understands that upon implementation of the Navy's recommendation for a potential consolidation and westward shift of NAWS China Lake departure flight routes, some safety risks may be potentially reduced or eliminated.

Significance after Implementation of Mitigation for Impact 3.10-1

As stated above, no additional feasible mitigation measures are currently available to reduce this impact to a less-than-significant level. Consequently, this impact is considered ***significant and unavoidable***.

Impact 3.10-2: The Proposed Project could include uses that create a significant hazard to the public or environment from the transportation, use, or disposal of hazardous materials.

Impact Summary

Level of Significance Before Mitigation: *Less than Significant*
Required Additional Policies or Mitigation Measures: *None Required*
Resultant Level of Significance: *Less than Significant*

Enclosure 1 (2) of (2)

Document 27

Enclosure 2

NAWSCL Email to

City of Ridgecrest

Document 27

Matthew Alexander

From: O'Gara, John E CIV NAVFACSW, GRDK39/OPDK [john.ogara@navy.mil]
Sent: Tuesday, June 23, 2009 4:30 PM
To: Matthew Alexander
Cc: Peterson, Gary C Capt NAWS CO China Lake, N00; Warren, Jason CIV NAWS China Lake, N45; Fox, Timothy H CIV NAVFAC SW, OPDK2/242
Subject: RE: June 23, 2009 Planning Commission meeting

Matthew,

NAWS staff has reviewed the 23 June 2009 City staff report for TTM 6691, GPA/ZC 08-04 referred to as the Wild Pointe Ranch project located on 179.2 acres of land adjacent to the departure corridor of the Armitage Airfield. This project includes 223 single family residential lots, 2 parks and 1 commercial parcel. We have carefully reviewed the revised TTM and the Conditions for Approval in this report. We concur with Conditions 52, 54 and 55, and recommend that Conditon 53 be revised to read as follows;

"53. The developer shall record in each parcel deed a Noise and Safety Disclosure to the projects future home buyers of
the developments location within the Military Influence Area (MIA) for the potential of aircraft noise in excess of 65db and potential safety risks. The disclosure will also release the Navy from effects of future operations that my increase noise and safety concerns. The Director of Public Services shall approve the content of this Disclosure prior to recording."

We find that the revised project description does conform with the goal of one dwelling unit per 40,000 square feet within the proposed zone change area and as such, we find this project as proposed with stipulated Approval Conditions to be compatible with the NAWS mission.

We appreciate the efforts of City staff and the Planning Commision to promote a project design that addresses Navy concerns and supports the mutual long term sustainaibility of both the City and our Installation.

V/r,

JOHN E. O'GARA
Installation Environmental Program Manager
Naval Air Weapons Station, China Lake
Work (760) 939-3213, Cell (760) 382-6991

Enclosure 2 (1) of (1)

Document 27

Enclosure 3

Office of Secretary of Navy Letter

CHINALAKE PUBLICCOMMENTS/033

Document 27

DEPARTMENT OF THE NAVY
OFFICE OF THE ASSISTANT SECRETARY
(INSTALLATIONS AND ENVIRONMENT)
1000 NAVY PENTAGON
WASHINGTON DC 20350-1000

Dr. Stan Rajtora, PhD
1239 E. Belle Vista Ave
Ridgecrest, CA 93555

DEC 4

Dear Dr. Rajtora,

Thank you for September 28, 2009 letter to the Secretary of the Navy expressing concerns regarding Naval Air Weapons Station China Lake (NAWSCL) airfield flight operations. I am responding for Secretary Mabus.

The City of Ridgecrest's Draft Environmental Impact Report (DEIR) risk assessment was based on departure flight tracks that have since been superseded by more recent flight track re-alignment decisions. Based on the Navy's 2007 Air Installations Compatible Use Zones (AICUZ) Study, several of the departure flights tracks were re-aligned westward. This action, identified as the Consolidated Departure Alternative, has been incorporated into NAWSCL flight ops since release of the study. The Navy also provided information about the revised flight tracks to the City of Ridgecrest.

The Navy remains committed to protecting public health and safety and will continue to actively participate in the City of Ridgecrest's planning process. Again, thank you for your interest in safety issues and the planning process. The Navy's point of contact for this issue is the Commanding Officer for NAWS China Lake, Captain Jeffrey A. Dodson, United States Navy. He can be reached at (760) 939-2211.

Sincerely,

Stephen J. Keating Jr.
By Direction

Enclosure 3 (1) of (1)

Document 27A

[redacted]

January 30, 2013

NAWS China Lake Land Withdrawal LEIS Project Manager
Naval Facilities Southwest Desert IPT
1220 Pacific Highway, San Diego, CA 92132-5190

Dear Mr. Beale:

On January 11, 2013, I received a letter from NAWS China Lake indicating the Navy was providing key reference material, necessary to fully review the LEIS, I had requested in my Legislative Environmental Impact Statement review comments. The letter also indicated the review period was reopened for a period of thirty days. In my review comments, I requested 1) information related to the crash footprint of aircraft departures for the China Lake airfield, 2) information supporting the need to increase the NAWSCL operational tempo twenty-five per cent, 3) information related to the recent significant increase in utilization of Runway 14 for departures, 4) information related to the recent eastward movement of the departure routes and 5) information related to the utilization of the
1 numerous departure routes. In reference to item 1) above, no additional information regarding departure crash envelopes is contained in the supplemental information. This
15.26 still needs to be provided in order for the public to make an informed review of the LEIS. Items 2 through 5 are addressed below.

The supplemental LEIS material contains no historical or other information justifying the requested twenty-five per cent increase in airfield departures. For a 2011 LEIS to be relevant, the LEIS should have provided operational tempo data through 2010. I was able to obtain historical operational tempo data from a Wyle Laboratories report, WR 08-08R dated February 2010, which I obtained via a Freedom of Information Act request. This Wyle report is the basis for the NAWSCL 2011 AICUZ study. The Wyle report provides operational tempo data for fifteen years, 1992 to 2007. The general trend for flight operations from 1999 to 2007 is a gradual decrease in operations. Operational tempo data for 2008 through 2010 is still unknown. The phase out of the F/A-18 would indicate the flight departure tempo might reduce even further over the next few years. The Wyle report provides no rationale for the LEIS requested twenty-five per cent increase in operational tempo. Since the draft LEIS clearly shows the baseline tempo exceeds noise compatibility thresholds, there should be a clear justification for a request for a 25% increase in
2/15.27 authorized operational tempo. There isn't. It is the responsibility of NAWSCL not only to explain the desire to increase tempo, but NAWSCL must perform due diligence relative to
3/2.33 noise mitigation in conjunction with both the current and increased tempo. It doesn't.

4 The LEIS supplemental material provides no information regarding need for the recent, 2011 AICUZ, significant increase in utilization of Runway 14 for departures. The Wyle report also provides no rationale for the increased use of Runway 14 for departures nor does it provide any historical data regarding the utilization of Runway 14 for departures. The report states runway departure utilization data was obtained from Air Traffic Activity Reports for all runways with the exception of Runway 14. The report documented that NAWSCL personnel modified departure utilization data for Runway 14 without any explanation for the basis of the NAWSCL data modification. Additionally, the Wyle report provides a flight intensity grid created from RADAR departure tracks that does not
13.59 substantiate the number of departures from Runway 14 claimed in the 2011 AICUZ report.

The LEIS supplemental material provides no information related to the need for the recent, 2011 AICUZ, eastward movement of the departure routes west of Ridgecrest relative the 2007 AICUZ routes. The Wyle report indicates that the departure routes for the 2011 AICUZ were initially extracted from the 2007 AICUZ report; but they were modified, according to the report, based upon outdated RADAR data from **1996.** The primary benefit of the 2007 AICUZ report was that it proposed, justified, and obtained CNO approval for the western movement of the flight routes to what was termed the Consolidated Departure Alternative. This route change was designed to both reduce safety risk and reduce noise

Document 27A

4 impacts to the Ridgecrest community. RADAR data taken prior to 2007 is obviously going to reflect the routes that existed prior to the 2007 routes. Using the outdated **1996** RADAR data to manipulate the departure routes negates the safety and noise benefits originally derived from moving the routes west. Even if the Wyle report had used 2007 or later RADAR data in refining the routes, the approach used by the 2011 AICUZ is inappropriate. Departure routes should be selected to minimize the safety and noise impact on the adjacent community. OPNAVINST 11010.36C is very clear; proposed changes to approved operational procedure require documented reasons, i.e., justification, and changes require approval by the CNO. Where is the justification for changing the routes? When was the
13.59 change approved? The pilots of the departing aircraft need to be told to fly the authorized routes. The routes need to be more than a suggestion. The last authorized routes came out of the 2007 AICUZ. The RADAR data is only needed to determine if the pilots are adhering to the authorized routes.

The LEIS supplemental material provides no information related to the utilization of the various 2011 AICUZ departure routes. The Wyle report provides inconsistent information regarding why the 2011 AICUZ distributes departure traffic among the various routes as it does, but the report does provide utilization percentages for the various departure routes including the departure routes originating from Runway 14. Although the Wyle report lists the 1996 RADAR data as the origin of the departure traffic distribution, nothing was documented in the report regarding an attempt to validate the 2011 AICUZ model against the more than ten-year-old RADAR data. The RADAR intensity map does not substantiate any significant departure operations under the Runway 14 departure routes. Not only does NAWSCL base the departure route utilization upon outdated RADAR track information, but also the modeled departure utilization data doesn't appear consistent with the outdated RADAR intensity map. The RADAR flight density map contained in the Wyle report is what a statistician or engineer would call a '*normal*' distribution of flight tracts centered on the NAWSCL owned corridor. That is exactly what one should expect. That is, most of the pilots fly close to the NAWSCL corridor centerline most of the time. The route distribution used for noise calculations in the Wyle report is definitely not a '*normal*' distribution. The logic behind the 2011 AICUZ route definition and route utilization is totally unclear and scientifically questionable.

In summary, no scientific or engineering material provided via the LEIS supplement gives additional information regarding the safety or noise issues addressed by my LEIS comments. Information obtained via the FOIA process, i.e., the Wyle report, tends to refute statements and conclusions made in the LEIS. The, hopefully inadvertent, use of 1996 RADAR data to modify the authorized 2007 AICUZ departure routes is a giant step
5 backwards relative both to safety risk and noise. The LEIS needs to provide a scientifically based noise environment using current runway departure frequency and current
13.59 departure route frequency where the routes conform to the authorized 2007 AICUZ Consolidated Departure Alternative routes. That noise environment needs to be included in the draft LEIS and distributed to the public so the public can make an informed review of the LEIS. The LEIS attempt to reference the noise environment from the 2011 AICUZ study, a study with questionable scientific basis and no formal public review, is unacceptable.

Sincerely,

Stan Rajtora, PhD

CC Lorelei Oviatt, Kern County Planning Director
Shannon Grove, 32nd Assembly District
Jean Fuller, 18th Senatorial District
Kevin McCarthy, 22nd Congressional District
Diane Feinstein, Senator
Barbara Boxer, Senator
Ridgecrest City Council/City Manager
Secretary of the Navy
Commander, NAWSCL

Document 28

Posted by: Teri Red Owl (teri@...) **on** Nov 08, 2012 / 4:50PM

"November 8, 2012

Naval Facilities Southwest Desert IPT
Attn: Gene Beale
1220 Pacific Highway
San Diego, California 92132

RE: Comments on the Draft Environmental Impact Statement/Legislative Environmental Impact Statement ("EIS/LEIS") for Renewal of the Naval Air Weapons Station China Lake ("NAWS") Public Land Withdrawal, California

http://chinalakeleis.com/engage/comments/45/edit 11/20/2012

CHINALAKE.PUBLICCOMMENTS/034

Dear Project Manager Beale:

The Owens Valley Indian Water Commission ("OVIWC) is a consortium of three (3) federally recognized Tribes located in the Owens Valley, Inyo County, California: the Bishop Paiute Tribe; the Big Pine Paiute Tribe of the Owens Valley and the Lone Pine Paiute/Shoshone Tribe. The OVIWC submits the following comments the Draft Environmental Impact Statement/Legislative Environmental Impact Statement for Renewal of the Naval Air Weapons Station China Lake Public Land Withdrawal (DEIS/LEIS). The comments are listed by page order.

1 Historical and Current Visitation of Coso Hot Springs by Tribes
On page ES-18 the DEIS/LEIS states "Tribes visit the Coso Hot Springs as a Traditional Cultural Property (TCP) since geothermal production began in the Coso Geothermal LMU. However, tribes have visited Coso Hot Springs as a sacred place long before there was even a United States of America. It is disrespectful and completely inaccurate to say that tribes have only visited the Coso Hot Springs since geothermal production began. Many records are available to substantiate the use of Coso Hot Springs by tribes including a 1977 report commissioned by California's Office of Historic Preservation entitled "Ethnographic Report on Coso Hot Springs" by Dorothea Theodoratus.

5.10

2 On page 4.5-6 the DEIS/LEIS states that "It is clear in light of the continued visitation to the hot springs by tribes from the Owens Valley and members of Kern River Native American Community that the Coso Hot Springs have retained their value and integrity as a TCP since geothermal production began in the Coso Geothermal LMU, and continue to do so." This section is misleading, and fails to mention the adverse effects of geothermal production on the traditional use of Coso Hot Springs. Many tribal Elders and their families discontinued going to Coso Hot Springs because of these adverse effects. Tribes have repeatedly shared with the leadership at NAWS that Coso Hot Springs is no longer able to be used in the traditional manner.

5.9

3 The OVIWC desires that the final EIS/LEIS have accurate information regarding the historical use of Coso Hot Springs by Native Americans and accurate tribal perspective on the current condition of Coso Hot Springs.

5.11

4 Absence of a Management Plan for Coso Hot Springs
On page 4.5-6 of the DEIS/LEIS it states that the June 1979 MOA with the tribes called for "the development of Cultural Resource Management Plan" and that the MOA "between the California SHPO and Commander of NAWSCL for the Navy Geothermal Development Program in the vicinity of Coso Hot Springs (U.S. Navy 1979b)" is the management plan. It needs to be noted that the MOA referred to as "U.S. Navy 1979b" was also signed by the Advisory Council on Historic Preservation (ACHP). U.S. Navy 1979b does not reference the June 1979 MOA as the basis for its existence and is not the management plan described in the June 1979 MOA. A management plan for Coso Hot Springs was proposed, but never completed. In Attachment 3, paragraph 4, the Captain of NAWS in 2001

5.12

shared that a management plan would be developed by NAWS and tribes. No management plan has been developed to date for the Coso Hot Springs. The language in the final EIS/LEIS must be changed to reflect the absence of a management plan for Coso Hot Springs.

5/5.13

6 The DEIS/LEIS says on page ES-18 that "No changes are proposed to geothermal plant operations and the conditions of the Hot Springs have been stable since 1993. The Proposed Action would have no adverse effects on historic properties, and there would be no significant impacts to cultural resources." The OVIWC does not agree with the statement that the Hot Springs have been stable since 1993, nor does the OVIWC agree that this action will not have impacts to historic properties and cultural impacts. The Hot Springs have not been stable since the development of geothermal energy within the Coso Geothermal Area. Monitoring reports show that water temperature and water levels are constantly in flux. In Attachment 4 there is a graph showing temperature change and elevation change at Coso Hot Springs. The graph was taken from "Coso Hot Springs Monitoring Report 2009-2010" which was produced by the Geothermal Program Office of NAWS.

5.14

7 The executive summary statement is in conflict with page 4.5-6 which states that "Coso Hot Springs monitoring reports are distributed annually to the SHPO, ACHP, and Native American groups who may have concerns regarding the potential effects of the Geothermal Development Program on the Hot Springs. Those concerns include appreciable change in water temperature and elevation at the South Pool since the onset of monitoring Coso Hot Springs surface activity, which could affect tribal use of the springs for healing purposes (Curry 2004)" (emphasis added). The "change" has been the increased water temperature of Coso Hot Springs ever since geothermal production and this change has affected tribal use of the Springs for the last 24 years.

5.15

8 The Geothermal Plant operations are considered renewable energy on page 3.9-6 of the DEIS/LEIS, but the geothermal plant operations cannot be considered a source of renewable energy. Coso Operating Company's geothermal operations cannot be considered renewable energy for two reasons. First, large quantities of water are constantly being lost to the atmosphere because the operator does not recapture and reinject the steam. Second, the operator now pumps water from the Rose Valley basin and transports it into the basin where the geothermal facility is located. This imported water is supposed to offset diminished energy production, but to date; it has failed to be anything but a terrible waste of water. In the 2009 EIR for the project, 4,839 ac-ft/yr of water would be pumped from groundwater in the Rose Valley and injected within the Coso Geothermal Plant operations for 30 years. To date, the project has been unable to deliver 4,830 ac-ft/yr to the Coso Geothermal Plant operations because of the environmental impacts associated with the groundwater pumping.

9.1

Power production and withdrawal of fluids from the Coso geothermal field began in 1987, and according to an April 2007 technical report entitled "Coso Hot Springs Analysis" prepared by Innovative Technical Solutions

Inc. (2007 Study), shortly after the onset of production, conditions within the Coso Hot Springs changed. In 1988, temperatures and water levels began to noticeably increase. Temperatures continued to rise, and in 1993 reached the boiling point of water (212 F). Although tribal members still frequent the springs, they were no longer conducive for bathing and the mud was too hot to handle.

9 It is physically impossible for Native Americans to use the Coso Hot Springs in a traditional manner because of the changes which have occurred since the implementation of the geothermal program. In response to this assertion, the Navy has stated that "NAWS China Lake acknowledges that appreciable changes in the water temperature and elevation have occurred in the South Pool since the Navy first began recording data from the Coso Hot Springs area in the 1970's". Due to the tribes' assertion and acknowledgement by the Navy that changes have taken place at Coso Hot Springs, the OVIWC contends that there have been adverse impacts at Coso Hot Springs and that the two Memoranda of Agreement (MOA) signed by the Navy in 1979 regarding the protection and use of Coso Hot Springs have been violated.

5.16

Both 1979 MOAs provide for the preservation of the hot springs. In the Ad Hoc Coso Committee MOA, paragraph 11 provides:

"That material or substantial alterations or permanent disturbances of the hot springs or the pond shall not be permitted. Both the Naval Weapons Center and the Native Americans pledge their mutual cooperative efforts to expeditiously develop a preservation and management plan acceptable to both parties and to the California State Office of Historic Preservation and approvable by the Advisory Council on Historic Preservation."

10/5.17 The preservation and management plan promised in the MOA was never developed.

The 1979 Programmatic MOA was also intended to address preservation and protection of the hot springs. The Programmatic MOA was designed specifically to address possible adverse impacts to Coso Hot Springs as a result of the geothermal plant. It outlines NAWS's responsibilities for extensive data collection and monitoring to determine if there are adverse impacts to the springs. Under the Programmatic MOA, NAWS was to provide the "Owens Valley Paiute Shoshone Band of Indians" with all the data collected and consult with the tribes at every stage of the geothermal plant development.

Of significance is Section 6.e. of the Programmatic MOA which states:

"In the event a perceptible change in the surface activity of the hot springs were to occur over a period of time as a result of the geothermal development program the Navy will cease those actions on the part of the Navy and/or its agents which can reasonably be presumed to be causing this effect and will make every reasonable effort to determine what actions could be taken to mitigate this change. The Navy will request the comments of the Owens Valley Paiute-Shoshone Band of Indians, the

California State Historic Preservation Officer and the Advisory Council on Historic Preservation. The Owens Valley Paiute-Shoshone Band of Indians will be afforded 30 working days to comment ..... [if the parties cannot agree] the Navy will request consultation with the Advisory Council in accordance with Title 36 ... prior to undertaking any actions which could reasonably be presumed to result in a further detrimental change in the Springs' activities."

NAWS has consistently contended that "perceptible changes" to the hot springs are not the result of the geothermal development program and over the years commissioned several studies supporting this conclusion. This position was again reiterated by NAWS in its cover letter with the 2007 Study which states: "Navy's position is that current scientific data cannot prove or disprove a correlation between geothermal operations and any perceptible changes that have occurred in the surface manifestations at the Coso Hot Springs." However, Navy does acknowledge in its letter that there has been appreciable change in the water temperature and elevation in the South Pool since the Navy first began recording data from the Coso Hot Springs area in the 1970s.

Interestingly, the 2007 Study does find that indeed there is a connection between the geothermal production and the condition of the hot springs. The technical portion of the Study concludes with "the timing of the onset of the geothermal fluid withdrawal and changes at the hot springs activity at Coso suggests a correlation." The 2007 Study acknowledges there has been "profound changes to the Coso geothermal system in response to production." Also, "there is some indication from the mathematical models that production also influenced the hot spring activities." And the changes to the springs "seem to correlate well with the onset of the geothermal production."

NAWS claimed that the 2007 Study was inconclusive on whether the geothermal development has resulted in the adverse impacts to the hot springs, but has acknowledged that changes to the surface activity at Coso Hot Springs have occurred. Despite that acknowledgement, NAWS has not taken any action to mitigate the change. It should be stated that continuing to conduct a monitoring program to observe changes is not mitigation. Mitigation as defined by Webster is "to lessen or to try to lessen the seriousness or extent of or to make less severe or harsh." In the environmental context, mitigation would be a project and/or program designed to lessen or compensate for impacts to a natural resource.

11 Therefore, the OVIWC contends that actions to mitigate the situation at Coso Hot Springs have not occurred and that the Navy is obligated to cease development of the geothermal resource until a mitigation strategy can be agreed upon.

5.25

12 On page 4.5-7 of the DEIS/LEIS it states that "Because there are no proposed changes to geothermal operations, because the conditions of Coso Hot Springs have been stable since 1993, and because Coso Hot Springs retains its value and integrity as a TCP, the Proposed Action would have no adverse effects on historic properties, and there would be no significant

5.15

CHINALAKE PUBLICCOMMENTS/035

12 impacts to cultural resources. However, should changes to the surface activity of the Hot Springs occur as a result of geothermal development, mitigation measures would be developed in accordance with the MOA (U.S. Navy 1979b)."

5.15 The OVIWC is requesting that this paragraph be deleted because it is inaccurate information. The "stable" conditions of pool temperatures at 160 to 180 degrees are meaningless in regards to traditional use because immersion in the Springs are impossible due to the adverse effects of geothermal production. The adverse impacts to Coso Hot Springs preceded the Proposed Action, and should be addressed in the CLUMP with revised tribal land management proposals with an accompanying MOA which addresses safety and access issues. "...changes in the surface activity of the Hot Springs" has occurred as a result of geothermal development, and mitigation measures have not yet been implemented. The conditions of the Hot Springs are not stable and that is why tribes and NAWS are creating a mechanism to continually update maps for the changing landscape at Coso Hot Springs for the safety of visitors.

13 The OVIWC has determined that Coso Hot Springs has been adversely
5.25 affected by the geothermal development occurring on withdrawn lands and would like to see the final EIS/LEIS address ways to mitigate the situation.

Potential Mitigation for Adverse Effects at Coso Hot Springs
In order to mitigate the adverse effects of geothermal development on Coso Hot Springs the tribes have proposed to NAWS that a transfer of ownership take place so that tribes can provide opportunity for healing at the Coso Hot Springs and Prayer Site. The DEIS/LEIS states on page 2-4 that "the Navy has determined that mission requirements for effective land use controls to ensure safety and security requirements preclude this from being a viable proposal. Such an action would not meet the Navy's purpose and need as it would allow for unregulated entry onto an active military test range and place land use decision authority for lands within the test range with a non-Navy entity...It should also be noted that a potential transfer of the Coso Hot Springs and Prayer Site is very speculative. The Navy does not view the property in question as being excess to its current or anticipated needs, nor would the Navy have authority to effect such a transfer itself even if it did consider the property excess. Therefore, this alternative was eliminated from further consideration."

The OVIWC is disappointed with Navy's conclusions with regard to future management alternatives for Coso Hot Springs. Over the past several months, tribes in discussion with NAWS, have brought up the need for a land transfer or cultural easement in order to provide a long-term management structure for Coso Hot Springs which would be proactive in protecting the Coso Hot Springs and guaranteeing maximum, safe access beyond the changing conditions which may occur with a change of command at NAWS.

A land transfer or cultural easement option can be tied to a revised access MOA which is currently being negotiated with the involved tribes and

NAWS. The Maturango Museum conducts "6 tours of up to 50 individuals each per month, with additional tours of smaller groups allowed" (p. 3.1-15). "Daily access to the Coso geothermal development area is coordinated with the NAWSCL Range Department and the area is evacuated whenever NAWSCL mission commitments indicate safety conflicts with weapons testing or other military uses of their Range land" (p. 3-1.14). These examples of widespread access to specific areas on the base can be used as examples for expanded access to Coso Hot Springs.

At a tribal consultation meeting on the NAWS Land Withdrawal Renewal EIS/LEIS on October 4, 2012 at the Fort Independence Reservation, the land transfer or cultural easement proposal was brought up for discussion by tribal representatives. Captain Lazar and Melanie Ravan, Senior Counsel to Navy Region Southwest, San Diego, said that increased access options and easement and land trust proposals would be investigated. These investigations need to be incorporated into the final EIS/LEIS.

14 The OVIWC believes that there are three options available for the transfer
14.4 of lands to the tribes for mitigation of adverse impacts at Coso Hot Springs: 1) conveyance in fee ownership to the Tribe or a consortium of Tribes organized in a nonprofit land trust; 2) transfer of administrative responsibility over the land from the Navy to the Bureau of Indian Affairs to hold it in trust for the Tribes; and 3) conveyance of a conservation easement to the Tribes or a tribal land trust. The Navy arguably has legal authority to implement any of these options.

1. Conveyance in Fee Ownership to the Tribes or Tribal Land Trust.

a. Conveyance of Surplus Land in Fee Without Restriction.

The Secretary of the Navy may convey land that has become "excess to the needs of the Navy" to any third party, including Indian Tribes. The Federal Property Act authorizes the Navy to dispose of so-called surplus real property to the Administrator of the General Services Administration, which may then convey such property to the general public. See 40 U.S.C. § 471 et seq.; 32 C.F.R. § 736.1.

To take advantage of this authority, the land on which Coso Hot Springs is located would have to be declared surplus in the Navy's land management plan and then offered for conveyance to other federal agencies and educational institutions. The Navy with this update to the CLUMP should identify Coso Hot Springs and the Prayer Site as surplus land to change the status of this land to make it eligible for a fee ownership conveyance.

b. Conveyance of Surplus Land in Fee Restricted to Natural Resource Conservation.

The Secretary of the Navy also has statutory authority to convey to eligible entities land that is considered "surplus" and that is considered "suitable and desirable for conservation purposes." 10 U.S.C. § 2694a(a)(2). The law requires that the deed of conveyance must stipulate that the property is to be "used and maintained for the conservation of natural resources in

perpetuity". § 2694a(c). If at any time the property is not being used for conservation purposes, the property will automatically revert to the United States. Entities eligible to receive a conveyance of land under this section include a "State or political subdivision of a State" and "a nonprofit organization that exists for the primary purpose of conservation of natural resources on real property." § 2694a(b)(1) and (2).

2. Transfer of Administrative Authority from the Navy to the Bureau of Indian Affairs to Hold in Trust for Indian Tribes.

The Navy has authority to transfer surplus land to other federal agencies for their use. 32 C.F.R. § 736.1(a). Under this authority, the title to the land remains with the United States, but the jurisdiction and administrative authority over the property is transferred to another federal agency.

There are two examples where an agency of the Department of Defense has transferred land to the Bureau of Indian Affairs to be held for the benefit of a federally-recognized Indian Tribe. In 2000, approximately 4,526 acres were transferred by the Secretary of the Army to the Secretary of the Interior "for management by the Bureau of Indian Affairs." 65 Federal Register 38299, June 20, 2000. The transfer is to remain in effect for 20 years, with the option of extending the term upon review by the Secretary of the Interior. The purpose of the transfer was to "protect an area having cultural, historical, religious, geological and archaeological significance to the Navajo Nation and the Pueblo of Zuni." Id. The land was to be managed "for these values, as well as, other compatible uses" in accordance with a Memorandum of Understanding between the Department of the Interior and the Ballistic Missile Defense Organization. Id. The Army retained the right to enter the property for the purposes of "activities related to the Fort Wingate Depot Activity Installation Restoration Program." Id. In the second example, in 2001, 903 acres in New Mexico were transferred from the military jurisdiction to BIA jurisdiction for a 20-year term. 66 Federal Register 44643, August 24, 2001.

3. Conveyance of a Conservation Easement.

Under this arrangement, the Navy would retain fee title to the land but grant an easement to an Indian Tribe or tribal land trust. The easement would provide that Coso Hot Springs would be preserved in perpetuity and that the members of an identified group would be allowed access for clearly defined cultural and religious purposes. A conservation easement is an interest in land and must be recorded in the county clerk's office. They remain in effect forever, unless otherwise provided in the easement agreement or subsequently amended by the parties. Conservation easements are typically made by agreement of the parties in a document entitled "Grant Deed of Conservation Easement."

Navy Objections to Transfer of Land Ownership to Tribes
On page 1-17 the DEIS/LEIS it states that "Navy review concluded that the potential loss of the lands being requested presented a significant safety and

security risk to the China Lake mission. The Commanding Officer further explained that the EIS/LEIS will identify the Tribes land ownership transfer proposal as an alternative given careful consideration but not carried forward for further review because it did not meet the Navy's identified purpose and need for the undertaking."

15 The final EIS/LEIS needs explain in detail why a transfer of the relatively
15.10 small footprint of Coso Hot Springs is a security risk, especially in light of the very large footprint of geothermal production which seems not to be a problem as a security risk for NAWS. It also needs to be explained in detail why the land ownership transfer proposal "did not meet the Navy's identified purpose and need for the undertaking." The land transfer or cultural easement proposal with an accompanying MOA with the tribes and the Navy would be part of the updated CLUMP, and needs to be included in all Alternatives. The proposal is not a stand-alone Alternative.

Page 3.1-9 of the DEIS/LEIS states that the Coso Geothermal is a safety/security buffer and over flight for weapons testing; however, on page 3.10.4 and additional pages, there are additional areas listed that are off the military base which have over flight plans. Therefore, it is essential to note that over flight occurs within the Coso Geothermal area, as well as, within civilian airspace. It is not discussed in detail how the Coso Geothermal area is a safety/security buffer except that nonadjacent areas are used for active
16 military training activities. Since the areas for active military training
10.34 activities are not being conducted in adjacent areas of the Coso Geothermal area, then it is unknown the need for it to be used as a safety/security buffer

Need for Additional Alternative
17 For the purposes of the EIS/LEIS, a 25% ramp down in activities is a
14.6 reasonable alternative which needs to be analyzed. On page 2-3 of the DEIS/LEIS the "Decrease Military RDAT&E and Training Alternative" was rejected for further analysis. In the Frequently Asked Questions on the Council for Environmental Quality NEPA website it states that "Section 1502.14 requires the EIS to examine all reasonable alternatives to the proposal. In determining the scope of alternatives to be considered, the emphasis is on what is "reasonable" rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant." The Tribe recognizes that the Navy increased the tempo by 25% in the last CLUMP and desires that a decrease in tempo by 25% be included in the list of alternatives within the final EIS/LEIS.

The Owens Valley Indian Water Commission hopes these comments will be included in the final EIS/LEIS and the CLUMP will be revised accordingly in consultation with the involved tribes.

Sincerely,

Teri Red Owl, Executive Director
OWENS VALLEY INDIAN WATER COMMISSION

CHINALAKE PUBLICCOMMENTS/036

Document 29

Posted by: Joe Ross ([redacted]) **on** Aug 24, 2012 / 12:24PM

1 "While the 2005 CLUMP provides for these, I would like to see additional planning and emphasis put on authorizing the following nonmilitary, but mission-compatible, land uses on NAWSCL: (1) Native American access;
1.3 (2) education
and research projects; (3) recreation; & (4) commercial uses including, but not limited to, energy development and power production (for not only geothermal but also solar, wind and other alternative energy).

2 An update to the CLUMP (as well as maps showing where these compatible activities could be done) should be incorporated into the Final EIS/LEIS. Even if included as an Appendix, such information should prove very helpful to the decisionmakers and Congress. As one example, there
13.8 may be potential to provide more OHV use across Randsburg Wash Access Road, as well as in other areas. This is especially important to consider with the potential future closure (for USMC use at MCAGCC/MAGTFTC Twentynine Palms) of about 160K acres in the Johnson Valley OHV Area to the south.

3 Please consider opening additional recreational facilities (in addition to
1.4 gym and golf course) to the public. This could include swimming pools, bowling alleys, and more.

4 Best of luck with the project. I support the continued training of our
1.5 military, but I also feel that all branches should strive for better effectiveness and efficiency with allocated acres. Try harder to provide for compatible land uses.

Sincerely,
J Ross

Document 30

Posted by: John Rothgeb ([redacted]) **on** Sep 15, 2012 / 6:30PM

"NAVSCL Draft EIS/LEIS

1 Page 4.7-4 lines 29 and 30
7.1 strike "seeking a renewed agreement to access the spring in perpetuity" replace with "recommending an easement for the full 25 year period of the CLUMP"

2 Page 3.7-9 In the paragraph beginning on line 23
7.2 insert "Water is currently extracted from Coso Cold Springs for domestic use by the community of Darwin"

3 Page 3.4-24 On line 22 after "rainfall."
7.3 insert "Water is currently extracted for domestic use from Coso Cold Springs for the Darwin Community"

1 Page 3.1-13 Under the heading "3.1.7 On-installation Nonmilitary Land Uses"
1.1 Add a subheading "3.1.7.x Darwin Water Supply" and under this new subheading
insert "The Darwin Community Services District(DCSD)has rights to access its historical water source, Coso Cold Springs, which is within NAWSCL boundaries. Recently a 5-year easement was approved by NAWSCL for DCSD access. The DCSD is recommending an easement be granted for the full 25 year period of the CLUMP"

Document 31

Naval Air Weapons Station China Lake Land Withdrawal

Comment Card

Comments can be submitted at any public meeting or postmarked by November 8, 2012.

1 1) WORKING WITH THE LOCAL GEM AND MINERAL SOCIETY
1.7 ALLOW ORGANIZED OUTING TO ALLOW ROCKHOUNDING TRIPS ON A CONTROLLED BASIS SIMILAR TO THE PETROGLYPH, BIRD COUNT, & HUNTING ACTIVITIES CURRENTLY TAKING PLACE.

2 2) ALLOW FOR HISTORIC OR EDUCATIONAL TOURS OF HISTORIC SITES ON THE RANGES. FOR EXAMPLE, WORK WITH
1.8 THE LOCAL HISTORIC SOCIETY, JEEP CLUB & OTHERS FOR A COUPLE OF TOURS OF THE TWENTY MULE TEAM ROAD. THERE ARE A LOT OF HISTORICAL AREAS ON THE RANGE WHERE SIMILAR ACTIVITIES COULD TAKE PLACE

Name: RON SCHILLER
Address: [redacted]
City: [redacted] State: Zip Code:
Telephone: [redacted] E-mail: [redacted]

www.ChinaLakeLEIS.com

Document 32

Naval Commander

My Name is Ervin McMichael [redacted]. I was inlisted in the Navy in 1996 I was discharged as an E4
I am requesting to have my Code changed in an effort to obtain a Job working for the Navy.
Also During my incarceration my wife Now (ex-wife) had someone steal my Idenity and they have been doing things in my Name her name was Karen Butler.
I beleive she has remarried however my right to the military is of vital importance to me especially if she has begun to raise an Army of Jules →

CHINALAKE PUBLICCOMMENTS/037

Document 32

I had gone to The pentagon to seek help in Changing these matters; However I was detained by Security and Almost shot because the Military has been brought under her control; as well as every one else in this Dam country.

The Queen of this nation is Gene parks united states Army

Raised out of Chicago.

The one Now in charge is Her cousin Karen Butler who is A thief.

For The Sake of what you need to know I am Christ ←

I want the people living under the ocean to be relocated to outter Space. out of my House.

Document 33

Naval Air Weapons Station China Lake Land Withdrawal
LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT AND SUPPORTING STUDIES

Comment Card

Comments can be submitted at any public meeting or postmarked by November 8, 2012.

1
15.3 If a potter mentions a website then it should also give the user friendly address that the potter refers to

Name: _____
Address: _____
City: _____ State: _____ Zip Code: _____
Telephone: _____ E-mail: _____

www.ChinaLakeLEIS.com

Document 34

Owens Valley Indian Water Commission

November 8, 2012

Naval Facilities Southwest Desert IPT
Attn: Gene Beale
1220 Pacific Highway
San Diego, California 92132

RE: Comments on the Draft Environmental Impact Statement/Legislative Environmental Impact Statement ("EIS/LEIS") for Renewal of the Naval Air Weapons Station China Lake ("NAWS") Public Land Withdrawal, California

Dear Project Manager Beale:

The Owens Valley Indian Water Commission ("OVIWC") is a consortium of three (3) federally recognized Tribes located in the Owens Valley, Inyo County, California: the Bishop Paiute Tribe; the Big Pine Paiute Tribe of the Owens Valley and the Lone Pine Paiute/Shoshone Tribe. The OVIWC submits the following comments the Draft Environmental Impact Statement/Legislative Environmental Impact Statement for Renewal of the Naval Air Weapons Station China Lake Public Land Withdrawal (DEIS/LEIS). The comments are listed by page order.

1
5.10 **Historical and Current Visitation of Coso Hot Springs by Tribes**
On page ES-18 the DEIS/LEIS states "Tribes visit the Coso Hot Springs as a Traditional Cultural Property (TCP) since geothermal production began in the Coso Geothermal LMU. However, tribes have visited Coso Hot Springs as a sacred place long before there was even a United States of America. It is disrespectful and completely inaccurate to say that tribes have only visited the Coso Hot Springs since geothermal production began. Many records are available to substantiate the use of Coso Hot Springs by tribes including a 1977 report commissioned by California's Office of Historic Preservation entitled "Ethnographic Report on Coso Hot Springs" by Dorothea Theodoratus.

2
5.9 On page 4.5-6 the DEIS/LEIS states that "It is clear in light of the continued visitation to the hot springs by tribes from the Owens Valley and members of Kern River Native American Community that the Coso Hot Springs have retained their value and integrity as a TCP since geothermal production began in the Coso Geothermal LMU, and continue to do so." This section is misleading, and fails to mention the adverse effects of geothermal production on the traditional use of Coso Hot Springs. Many tribal Elders and their families discontinued going to Coso Hot Springs because of these adverse effects. Tribes have

46 Tu Su Lane • Bishop, CA 93514 • 760-873-3300 • 760-873-3320 FAX

Document 34

2/5.9 repeatedly shared with the leadership at NAWS that Coso Hot Springs is no longer able to be used in the traditional manner.

3
5.11 The OVIWC desires that the final EIS/LEIS have accurate information regarding the historical use of Coso Hot Springs by Native Americans and accurate tribal perspective on the current condition of Coso Hot Springs.

4
5.12 **Absence of a Management Plan for Coso Hot Springs**
On page 4.5-6 of the DEIS/LEIS it states that the June 1979 MOA with the tribes called for "the development of Cultural Resource Management Plan" and that the MOA "between the California SHPO and Commander of NAWSCL for the Navy Geothermal Development Program in the vicinity of Coso Hot Springs (U.S. Navy 1979b)" is the management plan. It needs to be noted that the MOA referred to as "U.S. Navy 1979b" was also signed by the Advisory Council on Historic Preservation (ACHP). U.S. Navy 1979b does not reference the June 1979 MOA as the basis for its existence and is not the management plan described in the June 1979 MOA. A management plan for Coso Hot Springs was proposed, but never completed. In Attachment 3, paragraph 4, the Captain of NAWS in 2001 shared that a management plan would be developed by NAWS and tribes. No management plan has been developed to date for the Coso Hot Springs. The language in the final EIS/LEIS must be changed to

5/5.12 reflect the absence of a management plan for Coso Hot Springs.

6
5.14 The DEIS/LEIS says on page ES-18 that "No changes are proposed to geothermal plant operations and the conditions of the Hot Springs have been stable since 1993. The Proposed Action would have no adverse effects on historic properties, and there would be no significant impacts to cultural resources." The OVIWC does not agree with the statement that the Hot Springs have been stable since 1993, nor does the OVIWC agree that this action will not have impacts to historic properties and cultural impacts. The Hot Springs have not been stable since the development of geothermal energy within the Coso Geothermal Area. Monitoring reports show that water temperature and water levels are constantly in flux. In Attachment 4 there is a graph showing temperature change and elevation change at Coso Hot Springs. The graph was taken from "Coso Hot Springs Monitoring Report 2009-2010" which was produced by the Geothermal Program Office of NAWS.

7
5.15 The executive summary statement is in conflict with page 4.5-6 which states that "Coso Hot Springs monitoring reports are distributed annually to the SHPO, ACHP, and Native American groups who may have concerns regarding the potential effects of the Geothermal Development Program on the Hot Springs. Those *concerns include appreciable change in water temperature and elevation* at the South Pool since the onset of monitoring Coso Hot Springs surface activity, which could affect tribal use of the springs for healing purposes (Curry 2004)" (emphasis added). The "change" has been the increased water temperature of Coso Hot Springs ever since geothermal production and this change has affected tribal use of the Springs for the last 24 years.

8
9.1 The Geothermal Plant operations are considered renewable energy on page 3.9-6 of the DEIS/LEIS, but the geothermal plant operations cannot be considered a source of renewable energy. Coso Operating Company's geothermal operations cannot be considered renewable energy for two reasons. First, large quantities of water are constantly being lost to the atmosphere because the operator does not recapture and reinject the steam. Second, the operator now pumps water from the Rose Valley basin and transports it into the basin where the geothermal facility is located. This imported water is supposed to offset diminished energy production, but to date, it has failed to be anything but a terrible waste of water. In the 2009 EIR for the project, 4,839 ac-ft/yr of water would be pumped from groundwater in the Rose Valley and injected within the Coso Geothermal Plant operations for 30 years. To date, the project has been unable to deliver 4,839 ac-ft/yr to the Coso Geothermal Plant operations because of the environmental impacts associated with the groundwater pumping.

CHINALAKE PUBLICCOMMENTS/038

Power production and withdrawal of fluids from the Coso geothermal field began in 1987, and according to an April 2007 technical report entitled "Coso Hot Springs Analysis" prepared by Innovative Technical Solutions Inc. (2007 Study), shortly after the onset of production, conditions within the Coso Hot Springs changed. In 1988, temperatures and water levels began to noticeably increase. Temperatures continued to rise, and in 1993 reached the boiling point of water (212 F). Although tribal members still frequent the springs, they were no longer conducive for bathing and the mud was too hot to handle.

9
5.16 It is physically impossible for Native Americans to use the Coso Hot Springs in a traditional manner because of the changes which have occurred since the implementation of the geothermal program. In response to this assertion, the Navy has stated that "*NAWS China Lake acknowledges that appreciable changes in the water temperature and elevation have occurred in the South Pool since the Navy first began recording data from the Coso Hot Springs area in the 1970's*". Due to the tribes' assertion and acknowledgement by the Navy that changes have taken place at Coso Hot Springs, the OVIWC contends that there have been adverse impacts at Coso Hot Springs and that the two Memoranda of Agreement (MOA) signed by the Navy in 1979 regarding the protection and use of Coso Hot Springs have been violated.

Both 1979 MOAs provide for the preservation of the hot springs. In the Ad Hoc Coso Committee MOA, paragraph 11 provides:

"That material or substantial alterations or permanent disturbances of the hot springs or the pond shall not be permitted. Both the Naval Weapons Center and the Native Americans pledge their mutual cooperative efforts to expeditiously develop a preservation and management plan acceptable to both parties and to the California State Office of Historic Preservation and approvable by the Advisory Council on Historic Preservation."

10/5.17 The preservation and management plan promised in the MOA was never developed.

The 1979 Programmatic MOA was also intended to address preservation and protection of the hot springs. The Programmatic MOA was designed specifically to address possible adverse impacts to Coso Hot Springs as a result of the geothermal plant. It outlines NAWS's responsibilities for extensive data collection and monitoring to determine if there are adverse impacts to the springs. Under the Programmatic MOA, NAWS was to provide the "Owens Valley Paiute Shoshone Band of Indians" with all the data collected and consult with the tribes at every stage of the geothermal plant development.

Of significance is Section 6.e. of the Programmatic MOA which states:

"In the event a perceptible change in the surface activity of the hot springs were to occur over a period of time as a result of the geothermal development program the Navy will cease those actions on the part of the Navy and/or its agents which can reasonably be presumed to be causing this effect and will make every reasonable effort to determine what actions could be taken to mitigate this change. The Navy will request the comments of the Owens Valley Paiute-Shoshone Band of Indians, the California State Historic Preservation Officer and the Advisory Council on Historic Preservation. The Owens Valley Paiute-Shoshone Band of Indians will be afforded 30 working days to comment ..... [if the parties cannot agree] the Navy will request consultation with the Advisory Council in accordance with Title 36 ...prior to undertaking any actions which could reasonably be presumed to result in a further detrimental change in the Springs' activities."

NAWS has consistently contended that "perceptible changes" to the hot springs are not the result of the geothermal development program and over the years commissioned several studies supporting this conclusion. This position was again reiterated by NAWS in its cover letter with the 2007 Study which states: 'Navy's position is that current scientific data cannot prove or disprove a correlation between geothermal operations and any perceptible changes that have occurred in the surface manifestations at

the Coso Hot Springs." However, Navy does acknowledge in its letter that there has been appreciable change in the water temperature and elevation in the South Pool since the Navy first began recording data from the Coso Hot Springs area in the 1970s.

Interestingly, the 2007 Study does find that indeed there is a connection between the geothermal production and the condition of the hot springs. The technical portion of the Study concludes with "the timing of the onset of the geothermal fluid withdrawal and changes at the hot springs activity at Coso suggests a correlation." The 2007 Study acknowledges there has been "profound changes to the Coso geothermal system in response to production." Also, "there is some indication from the mathematical models that production also influenced the hot spring activities." And the changes to the springs "seem to correlate well with the onset of the geothermal production."

NAWS claimed that the 2007 Study was inconclusive on whether the geothermal development has resulted in the adverse impacts to the hot springs, but has acknowledged that changes to the surface activity at Coso Hot Springs have occurred. Despite that acknowledgement, NAWS has not taken any action to mitigate the change. It should be stated that continuing to conduct a monitoring program to observe changes is not mitigation. Mitigation as defined by Webster is "to lessen or to try to lessen the seriousness or extent of or to make less severe or harsh." In the environmental context, mitigation would be a project and/or program designed to lessen or compensate for impacts to a natural resource. Therefore, the OVIWC contends that actions to mitigate the situation at Coso Hot Springs have not occurred and that the Navy is obligated to cease development of the geothermal resource until a mitigation strategy can be agreed upon.

11
5.25

12
5.15 On page 4.5-7 of the DEIS/LEIS it states that "Because there are no proposed changes to geothermal operations, because the conditions of Coso Hot Springs have been stable since 1993, and because Coso Hot Springs retains its value and integrity as a TCP, the Proposed Action would have no adverse effects on historic properties, and there would be no significant impacts to cultural resources. However, should changes to the surface activity of the Hot Springs occur as a result of geothermal development, mitigation measures would be developed in accordance with the MOA (U.S. Navy 1979b)."

The OVIWC is requesting that this paragraph be deleted because it is inaccurate information. The "stable" conditions of pool temperatures at 160 to 180 degrees are meaningless in regards to traditional use because immersion in the Springs are impossible due to the adverse effects of geothermal production. The adverse impacts to Coso Hot Springs preceded the Proposed Action, and should be addressed in the CLUMP with revised tribal land management proposals with an accompanying MOA which addresses safety and access issues. "...changes to the surface activity of the Hot Springs" has occurred as a result of geothermal development, and mitigation measures have not yet been implemented. The conditions of the Hot Springs are not stable and that is why tribes and NAWS are creating a mechanism to continually update maps for the changing landscape at Coso Hot Springs for the safety of visitors.

13
5.25 The OVIWC has determined that Coso Hot Springs has been adversely affected by the geothermal development occurring on withdrawn lands and would like to see the final EIS/LEIS address ways to mitigate the situation.

Potential Mitigation for Adverse Effects at Coso Hot Springs

In order to mitigate the adverse effects of geothermal development on Coso Hot Springs the tribes have proposed to NAWS that a transfer of ownership take place so that tribes can provide opportunity for healing at the Coso Hot Springs and Prayer Site. The DEIS/LEIS states on page 2-4 that "the Navy has determined that mission requirements for effective land use controls to ensure safety and security requirements preclude this from being a viable proposal. Such an action would not meet the Navy's purpose and need as it would allow for unregulated entry onto an active military test range and place land use decision authority for lands within the test range with a non-Navy entity....It should also be

noted that a potential transfer of the Coso Hot Springs and Prayer Site is very speculative. The Navy does not view the property in question as being excess to its current or anticipated needs, nor would the Navy have authority to effect such a transfer itself even if it did consider the property excess. Therefore, this alternative was eliminated from further consideration."

The OVIWC is disappointed with Navy's conclusions with regard to future management alternatives for Coso Hot Springs. Over the past several months, tribes in discussion with NAWS, have brought up the need for a land transfer or cultural easement in order to provide a long-term management structure for Coso Hot Springs which would be proactive in protecting the Coso Hot Springs and guaranteeing maximum, safe access beyond the changing conditions which may occur with a change of command at NAWS.

A land transfer or cultural easement option can be tied to a revised access MOA which is currently being negotiated with the involved tribes and NAWS. The Maturango Museum conducts "6 tours of up to 50 individuals each per month, with additional tours of smaller groups allowed" (p. 3.1-15). "Daily access to the Coso geothermal development area is coordinated with the NAWSCL Range Department and the area is evacuated whenever NAWSCL mission commitments indicate safety conflicts with weapons testing or other military uses of their Range land" (p. 3-1.14). These examples of widespread access to specific areas on the base can be used as examples for expanded access to Coso Hot Springs.

At a tribal consultation meeting on the NAWS Land Withdrawal Renewal EIS/LEIS on October 4, 2012 at the Fort Independence Reservation, the land transfer or cultural easement proposal was brought up for discussion by tribal representatives. Captain Lazar and Melanie Ravan, Senior Counsel to Navy Region Southwest, San Diego, said that increased access options and easement and land trust proposals would be investigated. These investigations need to be incorporated into the final EIS/LEIS.

14
14.4 The OVIWC believes that there are three options available for the transfer of lands to the tribes for mitigation of adverse impacts at Coso Hot Springs: 1) conveyance in fee ownership to the Tribe or a consortium of Tribes organized in a nonprofit land trust; 2) transfer of administrative responsibility over the land from the Navy to the Bureau of Indian Affairs to hold it in trust for the Tribes; and 3) conveyance of a conservation easement to the Tribes or a tribal land trust. The Navy arguably has legal authority to implement any of these options.

1. Conveyance in Fee Ownership to the Tribes or Tribal Land Trust.

   a. Conveyance of Surplus Land in Fee Without Restriction.

The Secretary of the Navy may convey land that has become "excess to the needs of the Navy" to any third party, including Indian Tribes. The Federal Property Act authorizes the Navy to dispose of so-called surplus real property to the Administrator of the General Services Administration, which may then convey such property to the general public. See 40 U.S.C. § 471 et seq.; 32 C.F.R. § 736.1.

To take advantage of this authority, the land on which Coso Hot Springs is located would have to be declared surplus in the Navy's land management plan and then offered for conveyance to other federal agencies and educational institutions. The Navy with this update to the CLUMP should identify Coso Hot Springs and the Prayer Site as surplus land to change the status of this land to make it eligible for a fee ownership conveyance.

   b. Conveyance of Surplus Land in Fee Restricted to Natural Resource Conservation.

The Secretary of the Navy also has statutory authority to convey to eligible entities land that is considered "surplus" and that is considered "suitable and desirable for conservation purposes." 10 U.S.C. §

2694a(a)(2). The law requires that the deed of conveyance must stipulate that the property is to be "used and maintained for the conservation of natural resources in perpetuity". § 2694a(c). If at any time the property is not being used for conservation purposes, the property will automatically revert to the United States. Entities eligible to receive a conveyance of land under this section include a "State or political subdivision of a State" and "a nonprofit organization that exists for the primary purpose of conservation of natural resources on real property." § 2694a(b)(1) and (2).

   2. Transfer of Administrative Authority from the Navy to the Bureau of Indian Affairs to Hold in Trust for Indian Tribes.

The Navy has authority to transfer surplus land to other federal agencies for their use. 32 C.F.R. § 736.1(a). Under this authority, the title to the land remains with the United States, but the jurisdiction and administrative authority over the property is transferred to another federal agency.

There are two examples where an agency of the Department of Defense has transferred land to the Bureau of Indian Affairs to be held for the benefit of a federally-recognized Indian Tribe. In 2000, approximately 4,526 acres were transferred by the Secretary of the Army to the Secretary of the Interior "for management by the Bureau of Indian Affairs." 65 Federal Register 38299, June 20, 2000. The transfer is to remain in effect for 20 years, with the option of extending the term upon review by the Secretary of the Interior. The purpose of the transfer was to "protect an area having cultural, historical, religious, geological and archaeological significance to the Navajo Nation and the Pueblo of Zuni." *Id.* The land was to be managed "for these values, as well as, other compatible uses" in accordance with a Memorandum of Understanding between the Department of the Interior and the Ballistic Missile Defense Organization. *Id.* The Army retained the right to enter the property for the purposes of "activities related to the Fort Wingate Depot Activity Installation Restoration Program." *Id.* In the second example, in 2001, 903 acres in New Mexico were transferred from the military jurisdiction to BIA jurisdiction for a 20-year term. 66 Federal Register 44643, August 24, 2001.

   3. Conveyance of a Conservation Easement.

Under this arrangement, the Navy would retain fee title to the land but grant an easement to an Indian Tribe or tribal land trust. The easement would provide that Coso Hot Springs would be preserved in perpetuity and that the members of an identified group would be allowed access for clearly defined cultural and religious purposes. A conservation easement is an interest in land and must be recorded in the county clerk's office. They remain in effect forever, unless otherwise provided in the easement agreement or subsequently amended by the parties. Conservation easements are typically made by agreement of the parties in a document entitled "Grant Deed of Conservation Easement."

Navy Objections to Transfer of Land Ownership to Tribes

On page 1-17 the DEIS/LEIS it states that "Navy review concluded that the potential loss of the lands being requested presented a significant safety and security risk to the China Lake mission. The Commanding Officer further explained that the EIS/LEIS will identify the Tribes land ownership transfer proposal as an alternative given careful consideration but not carried forward for further review because it did not meet the Navy's identified purpose and need for the undertaking."

15
15.10 The final EIS/LEIS needs explain in detail why a transfer of the relatively small footprint of Coso Hot Springs is a security risk, especially in light of the very large footprint of geothermal production which seems not to be a problem as a security risk for NAWS. It also needs to be explained in detail why the land ownership transfer proposal "did not meet the Navy's identified purpose and need for the undertaking." The land transfer or cultural easement proposal with an accompanying MOA with the tribes and the Navy would be part of the updated CLUMP, and needs to be included in all Alternatives. The proposal is not a stand-alone Alternative.

CHINALAKE PUBLICCOMMENTS/039

Document 34

Page 3.1-9 of the DEIS/LEIS shares that the Coso Geothermal is a safety/security buffer and over flight for weapons testing; however, on page 3.10 4 and additional pages, there are additional areas listed that are off the military base which have over flight plans. Therefore, it is essential to note that over flight occurs within the Coso Geothermal area, as well as, within civilian airspace. It is not discussed in detail how the Coso Geothermal area is a safety/security buffer except that nonadjacent areas are used for active military training activities. Since the areas for active military training activities are not being conducted in adjacent areas of the Coso Geothermal area, then it is unknown the need for it to be used as a safety/security buffer.

16
10.34

Need for Additional Alternative

17
14.6

For the purposes of the EIS/LEIS, a 25% ramp down in activities is a reasonable alternative which needs to be analyzed. On page 2-3 of the DEIS/LEIS the "Decrease Military RDAT&E and Training Alternative" was rejected for further analysis. In the Frequently Asked Questions on the Council for Environmental Quality NEPA website it states that "Section 1502.14 requires the EIS to examine all reasonable alternatives to the proposal. In determining the scope of alternatives to be considered, the emphasis is on what is "reasonable" rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant." The Tribe recognizes that the Navy increased the tempo by 25% in the last CLUMP and desires that a decrease in tempo by 25% be included in the list of alternatives within the final EIS/LEIS.

The Owens Valley Indian Water Commission hopes these comments will be included in the final EIS/LEIS and the CLUMP will be revised accordingly in consultation with the involved tribes.

Sincerely,

Teri Red Owl

Teri Red Owl, Executive Director
OWENS VALLEY INDIAN WATER COMMISSION

Page 7 of 7

Document 35

STATE OF CALIFORNIA — Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
Web Site www.nahc.ca.gov
e-mail: ds_nahc@pacbell.net

August 29, 2012

Admiral D.R. Smith, Rear Admiral
United States Navy
ATTN: Mr. Gene Beale, Project Manager
NAWS China Lake Land Withdrawal LEIS
Naval Facilities Engineering Command Southwest
1220 Pacific Highway
San Diego, CA 92132-5178

Re: Sacred Lands File Search and Native American Contacts list for the proposed **"Draft Environmental Impact Statement (DEIS)for the Public Lands Withdrawal Proposal at the Naval Air Weapons Station China Lake Project;"** located in Kern and Inyo Counties, California

Dear Admiral Smith:

The Native American Heritage Commission (NAHC) is the California State 'Trustee Agency' pursuant to Public Resources Code §21070 for the protection of California's Native American Cultural Resources. The NAHC is also a 'reviewing agency' for environmental documents prepared under the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq*), 36 CFR Part 800.3, .5 and are subject to the Tribal and interested Native American consultation as required by the National Historic Preservation Act, as amended (Section 106) (16 U.S.C. 470; Section 106, [4f], 110 [f] [k], 304). The provisions of the Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. 3001-3013) and its implementation (43 CFR Part 10.2), and California Government Code §27491 may apply to this project if Native American human remains are inadvertently discovered.

1
5.1

The NAHC is of the opinion that the federal standards, pursuant to the above-referenced Acts and the Council on Environmental Quality (CSQ; 42 U.S.C. 4371 *et seq*) are similar to and in many cases more stringent with regard to the 'significance' of historic, including Native American items, and archaeological, including Native American items at least equal to the California Environmental Quality Act (CEQA.). In most cases, federal environmental policy require that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Statement (EIS).

2
5.2

The NAHC did conduct a Sacred Lands File (SLF) search of its Inventory and Native American cultural resources **were identified** in the area you specified. Early and quality consultation with the Native American representatives on the attached list may provide detailed information of sites with which they are aware. Also note that the absence of archaeological resources does not preclude their existence, particularly at the subsurface level.

The NAHC Sacred Lands File Inventory of the Native American Heritage Commission is established by the California Legislature pursuant to California Public Resources Code

Document 35

§§5097.94(a) and 5097.96. The NAHC Sacred Lands Inventory is populated by submission to the data by Native American tribes and Native American elders. In this way it differs from the California and National Register of Historic Places under the jurisdiction of the U.S. Secretary of the Interior.

The NAHC, pursuant to Appendix B of the Guidelines to the California Environmental Quality Act (CEQA) is designated as the agency with expertise in the areas of issues of cultural significance to California Native American communities. Also, in the 1985 California Appellate Court decision (170 Cal App 3rd 604), the court held that the NAHC has jurisdiction and special expertise, as a state agency, over affected Native American resources, impacted by proposed projects including archaeological, places of religious significance to Native Americans and burial sites.

Culturally affiliated tribes are to be consulted to determine possible project impacts pursuant to the National Historic Preservation Act, as amended. Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. The NAHC recommends as part of 'due diligence', that you also contact the nearest Information Center of the California Historical Resources Information System (CHRIS) of the State Historic Preservation Office (SHPO) for other possible recorded sites in or near the APE (contact the Office of Historic Preservation at 916-445-7000).

3
5.3

Attached is a list of Native American contacts is attached to assist you pursuant to Section 800.2(c)(1)(i) and Section 800.2(c)(2); they may have knowledge of cultural resources in the project area. It is advisable to contact the persons listed and seek to establish a 'trust' relationship with them; if they cannot supply you with specific information about the impact on cultural resources, they may be able to refer you to another tribe or person knowledgeable of the cultural resources in or near the affected project area.

4
5.4

Lead agencies should consider avoidance, in the case of cultural resources that are discovered. A tribe or Native American individual may be the only source of information about a cultural resource; this is consistent with the NHPA (16 U.S.C. 470 *et seq* Sections. 106, 110, and 304) Section 106 Guidelines amended in 2009. Also, federal Executive Orders Nos. 11593 (preservation of cultural environment), 13175 (coordination & consultation) and 13007 (Sacred Sites) are helpful.

NEPA regulations provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery. Even though a discovery may be in federal property, California Government Code §27460 should be followed in the event of an accidental discovery of human remains during any groundbreaking activity; in such cases California Government Code §27491 and California Health & Safety Code §7050.5 will apply and construction cease in the affected area.

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251.

Sincerely,

Dave Singleton
State Clearinghouse

Attachment: Native American Contacts list

Document 35

Native American Contacts
Inyo and Kern Counties
August 29, 2012

Big Pine Band of Owens Valley
Virgil Moose, Chairperson
P. O. Box 700 — Owens Valley Paiute
Big Pine , CA 93513
bigpinetribaladmin@earthlink
760- 938-2003
(760) 938-2942-FAX

Ron Wermuth
P.O. Box 168 — Tubatulabal, Kawaiisu, Koso, Yokuts
Kernville , CA 93238
warmoose@earthlink.net
(760) 376-4240 - Home
(916) 717-1175 - Cell

Bishop Paiute Tribe
Chad Delgado, Chairperson
50 Tu Su Lane — Paiute - Shoshone
Bishop , CA 93514
(760) 873-3584
(760) 873-4143

Bishop Paiute Tribe
Brian Adkins, Environmental Mger
50 Tu Su Lane — Paiute - Shoshone
Bishop , CA 93514
(760) 873-3076

Fort Independence Community of Paiute
Israel Naylor, Chairperson
P.O. Box 67 — Paiute
Independence CA 93526
Israel@fortindependence.
(760) 878-5160
(760) 878-2311- Fax

Kern Valley Indian Council
Julie Turner, Secretary
P.O. Box 1010 — Southern Paiute, Kawaiisu, Tubatulabal, Koso, Yokuts
Lake Isabella, CA 93240
(661) 366-0497
(661) 340-0032 - cell

Timbisha Shoshone Tribe
George Gholson, Chairperson
785 North Main Street, Suite — Western Shoshone
Bishop , CA 93514
(760) 873-9003
(760) 873-9004 FAX

Timbisha Shoshone Tribe THPO
Barbara Durham, Tribal Historic Preservation — Western Shoshone
P.O. Box 206
Death Valley , CA 92328
dvdurbarbara@netscape.
(760) 786-2374
(760) 786-2376 FAX

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable for contacting local Native Americans with regard to cultural resources for the proposed Public Lands Withdrawal Proposal of the Naval Air Weapons Station China Lake; draft Environmental Impact Statement (DEIS); located in northern Kern and southern Inyo counties, California.

CHINALAKE PUBLICCOMMENTS/040

Document 35

Native American Contacts
Inyo and Kern Counties
August 29, 2012

Big Pine Band of Owens Valley THPO
Bill Helmer, Tribal Historic Preservation Officer
P.O. Box 700 — Paiute
Big Pine , CA 93513
amargosa@sol.com
(760) 938-2003
(760) 937-3331 - cell
(760) 938-2942 fax

Lone Pine Paiute Shoshone Reservation
Mary Wuester, Chairman
P.O. Box 747 — Paiute Shoshone
Lone Pine , CA 93545
(760 876-1034
760-876-8302
(760) 876-8302

Walker River Reservation
Melanie McFalls, Chairperson
P.O. Box 220 — Northern Paiute
Schurz , NV 89427
775-773-2306
775-773-2585 - Fax

Lone Pine Paiute Shoshone Reservation
Kathy Bancroft, Cultural Resources Officer
P.O. Box 747 — Paiute Shoshone
Lone Pine , CA 93545
406-570-5289
kathybncrft@yahoo.com
760-876-8302 FAX

Kern Valley Indian Council
Robert Robinson, Co-Chairperson
P.O. Box 401 — Tubatulabal Kawaliso Koso Yokuts
Weldon , CA 93283
brobinson@lwvisp.com
(760) 378-4575 (Home)
(760) 549-2131 (Work)

Bishop Paiute Tribe THPO
50 Tu Su Lane — Paiute - Shoshone
Bishop , CA 93514
(520) 404-7992 - cell
(760) 873-4143 - FAX

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code

This list is applicable for contacting local Native Americans with regard to cultural resources for the proposed Public Lands Withdrawal Proposal of the Naval Air Weapons Station China Lake; draft Environmental Impact Statement (DEIS); located in northern Kern and southern Inyo counties, California.

Document 36A

[redacted]

CERTIFIED MAIL NO. 4481 4639
Return Receipt Requested

Mr. Gene Beale, Manager
Naval Facilities Engineering Command, Southwest,
ATTN: NAWSCL Land Withdrawal Renewal EIS/LEIS Project
1220 Pacific Highway,
San Diego, California 92132-5190

Re: Extension of the current China Lake Naval Air Weapons Station (NAWS) Land withdrawal; Draft Legislative Environmental Impact Statement

1 6.5 The Draft Legislative Environmental Impact Statement (DLEIS) fails to address impacts to known mineral resources, a legal requirement, or whether those resources can be accommodated within the planning prescriptions of the China Lake Naval Air Weapons Station (NAWS) Comprehensive Land Use Management Plan.

Portions of the 1.1 million acre NAWS have been closed or have had limited access to mineral resource development under the mining laws and the mineral leasing laws, formally since 1947 (Public Land Order (PLO) 431 dated December 19, 1947; North Range) and 1954 (PLO 673 dated October 3, 1950; South Range)[1], and effectively since the War Production Board promulgated Limitation Order L-208 on October 8, 1942 (7 F.R. 7992)[2]. The withdrawals were re-authorized in 1984 pursuant to the withdrawal review process under Section 204(l)(1) of the Federal Land Policy and Management Act of 1976 (FLPMA; 43 USC 1701,1714) and with the current NAWS boundary, since October 31, 1994, the date of the California Desert Protection Act (CDPA; Section 802(a), Public Law 103-433). Under the CDPA, all existing withdrawals will terminate on October 31, 2014.

The Navy has subsequently applied to the Secretary of the Interior through Bureau of Land Management (BLM) to continue the existing withdrawal of public land encumbered by and all lands within the existing NAWS boundary. Any new withdrawal will be by Act of Congress pursuant to the Engle Act of 1958 (Public Law 85-337).

[1] Total aggregate area under PLO 431 was 648,749.29 acres (North Range), and under PLO 673, 172,739 acres (Mojave B Range/South Range).

[2] Limitation Order L-208 (7 F.R. 7992) closed all non-essential mining operations in the United States and its territories, specifically related to the mining of gold and other precious metals such as silver that were deemed "non-strategic" by the Board, and where continued mining of these metals and materials was deemed as an industrial activity incapable of contributing to the war effort, and the labor, materials, and capital would be in competition with war production efforts.

Document 36A

The Navy requires the withdrawal from mineral entry and leasing in order to secure use and occupation to further military research, development, test and evaluation, training, and demilitarization activities.

2 6.5 The Engle Act requires consideration of the impacts from the withdrawal on potential mineral resources within the NAWS boundary to be addressed in any decision making process. Specifically stating in Section 3 that:

> *Any application hereafter filed for a withdrawal, reservation, or restriction, the approval of which will, under section 2 of this Act, require an Act of Congress, shall specify-*
>
> > *(7) whether, and if so to what extent, the proposed use will affect continuing full operation of the public land laws and Federal regulations relating to conservation, utilization, **and development of mineral resources**, timber and other material resources, grazing resources, fish and wildlife resources, water resources, and scenic, wilderness, and recreation and other values* (emphasis added).

As reiterated by the Supreme Court in the case Robertson v. Methow Valley Citizens, the National Environmental Policy Act (NEPA; 42 USC 4321 *et seq*) is the platform for an analysis of potential impacts from a federally funded action. The Court stating:

> *... the agency, in reaching its decision, will have available, and will carefully consider, detailed information concerning significant environmental impacts; it also guarantees that the **relevant information will be made available to the larger audience that may also play a role in both the decision making process and the implementation of that decision**.* (emphasis added; 490 U.S. 332, 349 (1989))

China Lake NAWS has been withdrawn from entry and development of non-geothermal mineral resources since 1947. While allowing mineral resources development within the base boundaries has not been a stated management objective since 1947, the Engle Act does allow for the disposition of, and exploration for, minerals where the Secretary of Defense deems that development will not interfere with the purpose and intent of the withdrawal. The Act states at Section 6:

> *...heretofore or hereafter made by the United States, shall be deemed to be subject to the condition that all minerals, including oil and gas, in the lands so withdrawn or reserved are under the jurisdiction of the Secretary of the Interior and there shall be no disposition of, or exploration for, any minerals in such lands except under the applicable public land mining and mineral leasing laws: Provided, That no disposition of, or exploration for, any minerals in such lands shall be made where the Secretary of Defense, after consultation with the*

Document 36A

> *Secretary of the Interior, determines that such disposition or exploration is inconsistent with the military use of the lands so withdrawn or reserved.*

As stated on page 1-4 of the DLEIS, BLM has a role, stating:

> *BLM's responsibilities under the FLPMA and CDPA are to identify and submit the proposed renewal through the Secretary of the Interior to Congress, including providing the information identified in Section 204 (c)(2) of the FLPMA.*

Section 204(c)(2) recites that:

> *(2) With the notices required by subsection (c) (1) of this section and within three months after filing the notice under subsection (e) of this section, the Secretary shall furnish to the committees–*
>
> > *(1) a clear explanation of the proposed use of the land involved which led to the withdrawal;*
> >
> > *(2) an inventory and evaluation of the current natural resource uses and values of the site and adjacent public and nonpublic land and how it appears they will be affected by the proposed use, including particularly aspects of use that might cause degradation of the environment, and also the economic impact of the change in use on individuals, local communities, and the Nation;*

Of more importance to my immediate concern regarding the adequacy of the DLEIS process is at Section 204(c) (12) where FLPMA provides Congressional intent regarding address of mineral resources.

> *...a report prepared by a qualified mining engineer, engineering geologist, or geologist which shall include but not be limited to information on: general geology, known mineral deposits, past and present mineral production, mining claims, mineral leases, evaluation of future mineral potential, present and potential market demands.*

3 6.5 I do not see a report included in the DLEIS documents nor do I see any mention of mineral resources at all[3]. After all, the public lands and the associated acquired lands within the NAWS boundary are to be withdrawn from all forms of appropriation under the United States mining laws, including mineral leasing laws. That is the intended purpose of the withdrawal. Under any scoping issue identification process, I would assume that the impact from limitations on the access to, and availability of known and potential mineral resources would be a paramount issue in the impact analysis section of the DLEIS, its purpose under the NEPA.

[3] This is an Engle Act withdrawal. It is not clear that the FLPMA 204(c)(12) report is required. Nonetheless, it is Congressional intent that mineral resources be addressed under both the Engle Act and NEPA.

CHINALAKE PUBLICCOMMENTS/041

In order to support increased base operations, the Navy completed a Comprehensive Land Use Management Plan (CLUMP). As stated in the February 2004 Final Environmental Impact Statement (FEIS for the CLUMP):

> *The CLUMP is a long-term, strategic plan that formalizes corporate process for land use planning and management at NAWS. This plan provides an integrated framework for the management of military operations, public health and safety practices, and environmental resource conservation programs.*

In the plan, one of the stated management objectives is to accommodate certain nonmilitary uses requiring access to NAWS-administered lands. As identified in the Executive Summary of the FEIS, the NAWS would continue to accommodate public access, limited to specific areas, on a case-by-case basis due to established safety and security requirements. Limited public access to designated areas would continue to be permitted according to the terms and conditions granted by the NAWS Commanding Officer. The FEIS continued where:

> *The Navy would continue to accommodate nonmilitary uses to the extent that these activities are compatible with military operations; do not create a safety, security, fiscal, or regulatory risk; and do not adversely impact the Station's natural and cultural resources.*

Those nonmilitary land uses that would continue under CLUMP were summarized at Table ES-1 of the FEIS and did not appear to accommodate access to, and
4 development of valuable mineral resources. Even so, I must assume that access to and
6.6 development of valuable mineral deposit identified within the boundaries of the NAWS can legally be developed, both under the authority and direction of the Engle Act and CLUMP. While the Secretary of the Interior manages mineral resources on lands withdrawn for the benefit of the military under the Engle Act, the installation commander must consent to any development, any such development would be under the appropriate public land laws. For example, in memorandums dated December 6, 1977, and November 30, 1977, between the NAWS and the BLM, the two agencies agreed that the land withdrawn by PLO 431[4]:

> *...shall be available for geothermal leasing upon NWC's written consent ...and that they will "cooperate in obtaining modifications to the applicable Public Land Orders to permit the leasing and development of geothermal resources on those lands ..., with jurisdiction to be vested in the Secretary of the Interior...*

[4] On July 12, 1982, the Congress gave the Secretary of the Navy at the China Lake NAWS the specific authority to search for, explore and develop geothermal resource within the limits of the NAWS.

So precedent has established that valuable geothermal resources have been accommodated on the NAWS when determined to be compatible with NAWS mission activities.

5 It is also required that in the review process, the NEPA document consider whether
14.12 other mineral resources can be accommodated within NAWS mission activities. This would part of the alternatives section of the DLEIS, and inventory and analysis fundamental in assessing the socio-economic impacts from allowing or barring access to, and development of mineral resources within the NAWS.

The closest compliance the Engle Act or NEPA regarding address of mineral resources is at 3.6.6 **Minerals Exploration**, stating:

> *Minerals exploration (mining) has been conducted on what is now NAWSCL since 1860. Section 3.5.2.2 provides details on mining activities.*

The referred-to section 3.5.2.2 (Historical Archaeological Resources states the following with regard to mining:

> *Although mining of precious metals and minerals occurred on what is now NAWSCL as early as circa 1860, the majority of the mining activities took place much later, between 1930 and 1943. Site types associated with mining are mines, prospects, adits, and associated structures; mining equipment; trash scatters; and ovens used to produce charcoal for processing ore. One of the larger mining interests in the vicinity of what is now NAWSCL was the American Magnesium Company's Epsom salt mine, which operated in the 1920s in what is now the Wingate Pass area. Associated with the mine, and partially within the South Range, is a monorail built to transport ore to nearby Trona (JRP 2000).*

Approximately 11 lines of text in the DLEIS assess mineral resources within the 1.1 million acre NAWS.

Since 1974, the Navy at China Lake has maintained as part of its command, within the engineering group, "qualified" individuals, who had been dedicated to mineral evaluations at the NAWS. Records show that this group have examined mineral properties within the NAWS and have published technical reports on their findings. The significant reports include:

- Mineral Resource Evaluation of Mojave B Ranges, July 1979 (NWC TM 5336);
- Mineral Deposits and Mineral Potential of the China Lake Complex of the Naval Weapons Center, China Lake, California, December 1983 (NWC TP 6498);

- Mineral Deposits and Mineral Potential of the Randsburg Wash Test Range, December 1983 (NWC TP 6465); and
- Mineral deposits and mineral potential of the Naval Weapons Center interrange access road corridor, May 1984 (Land Withdrawal Office, Naval Weapons Center, China Lake, California).

From 1946 through 1951, BLM has conducted 768 mineral investigations of mining claims in the NAWS, some of these properties were determined valid and subsequently either included in an access easement, or condemned through legal processes.

The reports by the NAWS engineering groups also show, for example, that in sampling campaigns, at least 80 samples collected showed values in excess of 0.1 troy ounce per ton, many above 0.5 troy ounce per ton. While not indicative in a property's value, it does indicate that mineralization does exist within the NAWS.

The US Geological Survey maintains a record of mineral activity worldwide. This database (Mineral Resource Data System (MRDS)[5] shows that within the boundary of the NAWS there are at least 189 mineral prospects, mines, or other mineral properties.

Another important consideration is that the NAWS in part, was effectively closed to mining since at least 1942 as a result of L-208, and at least formally withdrawn from mineral entry and location since 1947 (North Range). Minerals of strategic importance, such as uranium, rare earths, and lithium were not examined within the NAWS because of withdrawals limiting access to these commodities. For example, uranium does exist in the Coso Formation immediately adjacent to the west boundary of the NAWS North Range. The Coso Formation extends into the NAWS North Range, and as such, may have a potential for the accumulation and occurrence of valuable uranium deposits. In addition, the United States is 94 percent dependent of imports of rare earth minerals, mainly from China. Geologic terrains supporting rare earth deposit models can be interpreted as existing in the NAWS.

6 There is no doubt that mineral deposits exist within the NAWS. The potential value of
6.5 these deposits, importance to the local, regional, or national economies, the economic benefits from development of these deposits, as well as impacts to and from their development by NAWS mission operations are required to be fully assessed and disclosed in the DLEIS as a matter of federal law. Since the Engle Act in 1958 and certainly the FLPMA since 1976, the Congress clearly intended that mineral resources be considered in withdrawal actions.

[5] http://tin.er.usgs.gov/mrds/

Assessing the impacts to accessing and development of mineral resources has been adequately examined in other base withdrawals and base expansions. Perhaps the Navy should look at the processes utilized by its sister agency, the Air Force, at the Nellis Range in Nevada[6]. A collaborative effort by the state of Nevada, BLM, and the Air Force met Congressional intent with respect to military withdrawals adequately assessing the impacts to mineral resources from the 3.2 million acre withdrawal.

7 Perhaps examining a similar cooperative effort with the California Geological Survey
6.5 would benefit this process. After all, the state does have an interest in any assessment of mineral resources within California, and the effects of actions impacting access to and availability of these resources.

I appreciate the opportunity to comment on these issues that I feel are important to the economic health and well-being of the United States.

Sincerely,

Rob Waiwood
Geologist

Division of Mineral Resources
California State Office
Bureau of Land Management
2800 Cottage Way, Suite W-1623
Sacramento, CA 95825

State Geologist
California Geological Survey
801 K Street, MS 12-30
Sacramento, CA 95814

[6] Mineral and Energy Resource Assessment of the Nellis Air Force Range, Clark, Lincoln, and Nye Counties, Nevada, Nevada Bureau of Mines and Geology Open-File Report 98-1 (http://www.nbmg.unr.edu/dox/of981v1.pdf; http://www.nbmg.unr.edu/dox/of981v2.pdf)

CHINALAKE PUBLICCOMMENTS/042

Document 37A

Posted by: Chris Johnson ([redacted] **on** Jan 20, 2013 / 5:59PM

1 "The Draft EIS is flawed because it does not adequately allow for OHV opportunities for public recreation on existing BLM land. The withdrawal of BLM land by the Navy and the recent closure of land in 2006 demonstrates that EIS claim that OHV use will not change is incorrect.
14.11 Alternative #1 should not be adopted because it will likely lead to additional land closures with the 25% increase of training and explosives on the base. Alternative #2 should not be followed because of the closures on existing BLM land at the "Sand Hills" and "Jaw Bone" areas. I believe the "No Action" option should be followed, unless the EIS properly reflects the loss of OHV access and another option is provided that addresses this loss and the resulting economic impact to the community."

Document 38A

Posted by: Jim Knox ([redacted] **on** Jan 18, 2013 / 5:15PM

1 "The Draft EIS is flawed because it does not adequately allow for OHV opportunities for public recreation on existing BLM land. The withdrawal of BLM by the Navy and the recent closure of land in 2006 demonstrates that EIS claim that OHV use will not change is incorrect. Alternative #1
14.11 should not be adopted because it will likely lead to additional land closures with the 25% increase of training and explosives on the base. Alternative #2 should not be followed because of the closures on existing BLM land at the "Sand Hills" and "Jaw Bone" areas. I believe the "No Action" option should be followed, unless the EIS properly reflects the loss of OHV access and another option is provided that addresses this loss and the resulting economic impact to the community."

CHINALAKE PUBLICCOMMENTS/043

CHAPTER 11.0
GLOSSARY

Abatement. Any set of measures designed to permanently eliminate health and environmental hazards. These may include (1) removal, permanent containment or encapsulation, or replacement, and (2) all preparation, cleanup, disposal, and post abatement clearance testing activities associated with such measures.

Accident Potential Zones. Areas immediately beyond the ends of DoD runways that have a higher potential for accidents than other areas. APZs include a 3,000-foot by 3,000-foot clear zone at each end of the runway and areas designated as APZ I and APZ II extending beyond the clear zone. The accident potential in the clear zone is so high that necessary land use restrictions prohibit reasonable economic use of the land. APZ I is less critical, but still possesses a significant risk factor. APZ I is a 3,000-foot by 5,000-foot area with land use compatibility guidelines that are sufficiently flexible to allow reasonable economic use of the land. APZ II is less critical than APZ I. APZ II is a 3,000-foot by 7,000-foot area, extending to 15,000 feet from the runway threshold.

Advisory Council on Historic Preservation. A 19-member body appointed, in part, by the President of the U.S. to advise the President and Congress and to coordinate the actions of federal agencies on matters relating to historic preservation, to comment on the effects of such actions on historic and archaeological resources, and to perform other duties as required by law (Public Law 89-655; 16 U.S.C. 470).

Air Installation Compatible Use Zone. A concept developed by the DoD to promote compatible land use development near its airfields in a manner that protects adjacent communities from noise and safety hazards associated with aircraft operations and to preserve the operational integrity of the airfields. The AICUZ program recommends land uses that will be compatible with noise levels, accident potential, and flight clearance requirements associated with military airfield operations. CNEL, shown as noise contour lines on AICUZ maps, prescribe what kind of land uses may occur at certain noise levels. Similarly, APZs limit the types of land uses that may occur below the zone.

Aircraft Operation. A takeoff or landing at an airfield.

Ambient Air Quality Standards. Standards established on state or federal level that define the limits for airborne concentrations of designated criteria pollutants (NO_2, SO_2, CO, total suspended particulates, ozone, and lead) to protect public health with an adequate margin of safety (primary standards) and public welfare, including plant and animal life, visibility, and materials (secondary standards).

American Indian Religious Freedom Act. AIRFA establishes as U.S. policy the protection of the rights of American Indians to practice their traditional religions, including “access to sites, possession of sacred objects, and freedom to worship through ceremonies and traditional rites” (42 U.S.C. 1996).

Average Annual Daily Traffic (AADT). For a 1-year period, the total volume passing a point or segment of a highway facility in both directions, divided by the number of days in the year.

Aquifer. A layer of underground sand, gravel, or spongy rock in which water collects.

Archaeological Site. Any location where humans have altered the terrain or discarded artifacts. The location of past cultural activity; a defined space with more or less continuous archaeological evidence.

Archaeology. A scientific approach to the study of human ecology, cultural history, and cultural process, emphasizing systematic interpretation of material remains.

Attainment Area. An area that meets the NAAQS for a criteria pollutant under the CAA or that meets CAAQS.

Bird-Aircraft Strike Hazard. The potential for a collision between an aircraft and a bird. Most bird-aircraft strikes do not result in aircraft damage, but some bird strikes have led to serious accidents, which has made BASH an important safety consideration. BASH also may include aircraft strikes with other animals, such as bats or rabbits.

California Desert Protection Act of 1994. CDPA (Public Law 103-433) acknowledges the value of federally owned desert lands in California and provides for their protection. CDPA requires development of a management plan for all lands withdrawn under CDPA.

Capacity. The maximum rate of flow at which vehicles can be reasonably expected to traverse a point or uniform segment of a lane or roadway during a specified period under prevailing roadway, traffic, and control conditions.

Carbon monoxide (CO). A colorless, odorless, poisonous gas produced by incomplete fossil fuel combustion. One of the pollutants for which there is a national ambient standard. See Criteria Pollutants.

Clean Air Act. The CAA legislates that air quality standards set by federal, state, and county regulatory agencies establish maximum allowable emission rates and pollutant concentrations for sources of air pollution on federal and private property. Also regulated under this law is proper removal and safe disposal of asbestos from buildings other than schools.

Clear Zone. A 3,000-foot by 3,000-foot area at each end of a military runway where aircraft accident risk is the highest and where the most severe restrictions to land use are recommended.

Comprehensive Environmental Response, Compensation, and Liability Act. CERCLA, also known as Superfund, was enacted in 1980 to ensure that a source of funds is available to clean up abandoned hazardous waste dumps, to compensate victims, to address releases of hazardous materials, and to establish liability standards for responsible parties. The Act also requires creation of a National Priorities List, which sets forth the sites considered to have the highest priority for cleanup under Superfund.

Contaminants. Undesirable substances rendering something unfit for use.

Council on Environmental Quality. Established by NEPA, the CEQ consists of three members appointed by the President. CEQ regulations (40 CFR §§ 1500-1508, as of July 1, 1986) describe the process for implementing NEPA, including preparation of EAs and EISs and timing and extent of public participation.

Criteria Pollutants. The CAA required the U.S. EPA to set air quality standards for common and widespread pollutants after preparing "criteria documents" summarizing scientific knowledge on their health effects. Today there are standards in effect for seven "criteria pollutants": SO_2, CO, particulate matter equal to or less than 2.5 microns in diameter ($PM_{2.5}$), particulate matter equal to or less than 10 microns in diameter (PM_{10}), NO_2, ozone, and lead.

Cumulative Impacts. The combined impacts resulting from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency or person undertakes them.

Day/Night Average Sound Level (DNL). The 24-hour average-energy sound level expressed in decibels (dB), with a 10-dB penalty added to sound levels between 10:00 p.m. and 7:00 a.m. to account for increased annoyance due to noise during night hours.

Decibel (dB). A unit of measurement on a logarithmic scale that describes the magnitude of a particular quantity of sound pressure or power with respect to a standard reference value.

Diversity. A measure of the richness of species in a community relative to the number of individuals of each species.

Drainage. An aboveground area that supplies the water to a particular stream.

Easement. An interest in land owned by another that entitles its holder to a specific limited use.

Effluent. A gas or fluid discharged into the environment.

Employment. The total number of persons working, both civilian and military.

Endangered Species. A species that is threatened with extinction throughout all or a significant portion of its range.

Endangered Species Act. An act of Congress of 1972; 16 U.S.C. §§ 1531-1543. The Act requires federal agencies to ensure that their actions do not jeopardize the existence of endangered or threatened species.

Energetic Wastes. Wastes associated with energetic materials, including high explosives, propellants, and rocket fuel.

Environmental Impact Statement. An analysis prepared pursuant to NEPA for actions with the potential to have a significant impact on the quality of the human environment or that are potentially controversial in environmental effects.

Fault. A fracture or a zone of fractures within a rock formation along which vertical, horizontal, or transverse slippage has occurred.

Federal Land Policy Management Act. FLPMA (Public Law 94-579) was enacted by Congress in 1976 to direct the management of public lands and the renewal of all public land withdrawals. The act also requires that BLM inventory, study, and review all 17 million acres (6,879,683 hectares) of public lands in California for their wilderness characteristics, as described in the Wilderness Act of 1964.

General Plan. A comprehensive planning document required for each California county and incorporated city. Each general plan must have seven elements: land use, circulation, housing, conservation, open space, noise, and safety.

Geology. The science that deals with earth; the materials, processes, environments, and history of the planet, including the rocks and their formation and structure.

Geothermal. Relating to or using the heat of the earth's interior.

Groundwater. The supply of water found beneath Earth's surface, usually in aquifers, which may supply wells and springs.

Hazardous Air Pollutant (HAP). One of 45 substances (originally 189 substances were listed in the 1990 Amendments) listed in the CAA as pollutants that present or may present a threat of adverse human health effects or adverse environmental effects when released into the air.

Hazardous Material. A substance or mixture of substances that poses a substantial present or potential risk to human health or the environment.

Hazardous Waste. A waste or combination of wastes that, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may cause or significantly contribute to an increase in mortality or an increase in serious irreversible illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Regulated under RCRA.

Historic Sites. Under the National Historic Preservation Act (NHPA), these are properties of national, state, or local significance in American history, architecture, archaeology, engineering, or culture, and worthy of preservation.

Hydrology. A science dealing with the properties, distribution, and circulation of water both above and below the earth's surface.

Imaginary Plane. The maximum safe height of buildings, towers, poles, and other possible obstructions to air navigation are defined by imaginary planes; another way to describe clearances for air navigation. These planes are invisible planes that radiate, at various increasing heights, from the runway or helicopter pad. The FAA considers any terrain or human-made objects that extend above the imaginary plane an obstruction. Imaginary planes include the primary surface, the approach departure surface, and the inner horizontal surface, the conical surface, and other outer horizontal surface, and transitional surfaces.

Impacts/Effects. An assessment of the meaning of changes in all attributes being studied for a given resource; an aggregation of all the adverse effects, usually measured using a qualitative and nominally subjective technique. Impacts are context sensitive and may include both beneficial and detrimental effects. In this EIS/LEIS, as well as in the CEQ regulations, the word impact is used synonymously with the word effect.

Infrastructure. The basic installations and facilities on which the continuance and growth of a locale depend (roads, schools, power plants, transportation, and communication systems).

Installation Restoration Program. A program established by the DoD to meet requirements of CERCLA of 1980 and SARA of 1986 which identifies, assesses, and cleans up or controls contamination from past hazardous waste disposal practices and hazardous material spills.

Interbedded. Occurring between beds or lying in a bed parallel to other beds of a different material.

Land Withdrawal. Public lands may be withdrawn and reserved for military training and testing in support of our national defense requirements. Such withdrawals and reservations are authorized by Act of Congress (for withdrawals of over 5,000 acres) or by order of the Secretary of the Interior (for withdrawals of less than 5,000 acres). Lands so designated are usually withdrawn from all forms of appropriation

under the public land laws, including the mining laws, but not the mineral and geothermal leasing laws and the Materials Act of 1947.

Level of Service. In transportation analysis, a qualitative measure describing operational conditions within a traffic stream and how they are perceived by motorists and pedestrians. Usually given a letter grade from A to F, with A being free-flow, E, capacity, and F, forced-flow. Factors considered in LOS analyses include speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort, and convenience. In public services, a measure describing the amount of public services available to community residents, generally expressed as the number of personnel providing service per 1,000 population.

Long-Term Impacts. Impacts that would occur over an extended period of time, whether they start during the construction or operations phase. Most impacts from the operations phase are expected to be long-term since program operations essentially represent steady-state conditions (i.e., impacts resulting from actions that occur repeatedly over a long period). However, long-term impacts also could be caused by construction activities if a resource is destroyed or irreparably damaged or if the recovery rate of the resource is very slow.

Master Plan. For DoN installations, a land use planning document compiled according to the DoN's Shore Facilities Planning Systems. A master plan provides guidance for future development at the facility.

Military Influence Area. A formally designated geographic planning area where military operations may impact local communities and, conversely, where local activities may affect the military's ability to carry out its mission. The MIA concept is included in the California Advisory Handbook for Community and Military Compatibility Planning, where it is acknowledged as a useful planning tool.

Military Operations Area (MOA). Airspace area of defined vertical and lateral limits established for the purpose of separating certain training activities such as air combat maneuvers, air intercepts, and aerobatics from other air traffic operating under IFR.

Military Training Route (MTR). Airspace of defined vertical and lateral dimensions established for the conduct of military flight training at air speeds in excess of 250 knots.

Mineral. A naturally occurring inorganic element or compound.

Mitigation. A method or action to reduce or avoid potential significant adverse effects of an action on the environment.

Munitions. Military munitions are all ammunition products and components produced for or used by the armed forces for national defense and security. The term includes: confined gaseous, liquid, and solid propellants; explosives, pyrotechnics, chemical, and riot control agents; and smokes and incendiaries, including bulk explosives and chemical warfare agents; chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, and demolition charges.

National Ambient Air Quality Standards (NAAQS). Section 109 of the CAA requires the U.S. EPA to set nationwide standards, the NAAQS, for widespread air pollutants. Currently, seven pollutants are regulated by primary and secondary NAAQS: CO, lead, NO_2, ozone, $PM_{2.5}$, PM_{10}, and SO_2. See Criteria Pollutants.

National Environmental Policy Act (NEPA). P.L. 91-190, passed by Congress in 1969. The Act established a national policy designed to encourage consideration of the influences of human activities on the natural environment. NEPA also established the CEQ. NEPA procedures require that environmental information be made available to the public before decisions are made. Information contained in NEPA documents must focus on the relevant issues in order to facilitate the decision-making process.

National Historic Preservation Act. The NHPA protects cultural resources. Section 106 of the act requires a federal agency to take into account the potential effect of a proposed action on properties listed on or eligible for listing in the National Register.

National Register of Historic Places. A register of districts, sites, buildings, structures, and objects important in American history, architecture, archaeology, and culture, maintained by the Secretary of the Interior under the authority of Section 2(b) of the Historic Sites Act of 1935 and Section 101(a)(1) of the NHPA of 1966, as amended.

Native American Graves Protection and Repatriation Act. NAGPRA defines the ownership and control of Native American human remains and associated funerary objects discovered or recovered from federal or tribal land.

Native Americans. Used in the collective sense to refer to individuals, bands, or tribes who trace their ancestry to indigenous populations of North America prior to Euro-American contacts.

Nitrogen Dioxide (NO_2). Gas formed primarily from atmospheric nitrogen and oxygen when combustion takes place at high temperature. NO_2 emissions contribute to acid deposition and formation of atmosphere ozone. One of the pollutants for which there is a national ambient standard. See Criteria Pollutants.

Nitrogen Oxides (NO_X). Gases formed primarily by fuel combustion, which contribute to the formation of acid rain. Hydrocarbons and NO_X combine in the presence of sunlight to form ozone, a major constituent of smog.

Noise. Any sound that is undesirable because it interferes with speech and hearing, is intense enough to damage hearing, or is otherwise annoying (unwanted sound).

Noise Contour. A line connecting points of equal noise exposure on a map. Noise exposure is often expressed using the DNL.

Nonattainment Area. An area that has been designated by the U.S. EPA or the appropriate state air quality agency, as exceeding one or more national or state ambient air quality standards.

100-year Floodplain. The area where there is a 1 percent probability of a flood in a given year.

Ozone (O_3) (ground level). A major ingredient of smog. Ozone is produced from reactions of hydrocarbons and NO_X in the presence of sunlight and heat.

Peak Daily Volume. The volume on a given section of roadway at the hour of highest traffic.

Peak-hour Volume. The highest number of vehicles passing a given section of roadway in 1 hour during a 24-hour period.

Perched Water-Bearing Zones. A body of groundwater of small lateral dimensions lying above a more extensive aquifer.

Permeability. The ability of rock or soils to transmit a fluid.

Petroglyph. Native American or prehistoric rock art.

Playa. A dry lake bed in a desert basin or a closed depression that contains water on a seasonal basis.

Pleistocene. Geologic time that began approximately 3 to 5 million years ago.

Plume. The elongated pattern of contaminated air or water originating at a point source, such as a hazardous waste disposal site.

Porter-Cologne Act. California statute that established the SWRCB to coordinate functions dealing with water rights, water pollution, and water quality.

Prevention of Significant Deterioration (PSD). In the 1977 amendments to the CAA, Congress mandated that areas with air cleaner than required by NAAQS must be protected from significant deterioration. The CAA's PSD program consists of two elements: requirements for best available control technology on major new or modified sources, and compliance with an air quality increment system.

Recharge. Replenishment of water to an aquifer.

Record of Decision. A document signed by the appropriate federal official completing an Environmental Impact Statement.

Region of Influence. For each resource, the region affected by the proposed action or alternatives and used for analysis in the affected environment and impact discussion.

Remediation. The process of removing or detoxifying environmental contamination.

Resource Conservation and Recovery Act. RCRA was enacted in 1976 as the first step in regulating the potential health and environmental problems associated with hazardous waste disposal. RCRA and the regulations developed by U.S. EPA to implement its provisions provide the general framework of the national hazardous waste management system, including the determination of whether hazardous wastes are being generated, techniques for tracking wastes to eventual disposal, and the design and permitting of hazardous waste management facilities.

Restricted Airspace. Restricted airspace is an area of limited dimensions wherein military activities must be confined because of their nature or wherein limitations may be imposed upon aircraft operations that are not a part of those activities.

Runoff. The noninfiltrating water entering a stream or other conveyance channel shortly after a rainfall.

Seismic. Pertaining to any earth vibration, especially an earthquake.

Seismic Zone. An area defined by the Uniform Building Code (1991), designating the amount of damage to be expected as the result of earthquakes. The U.S. is divided into six zones: (1) Zone 1- no damage; (2) Zone 2 - minor damage; corresponds to intensities V and VI of the modified Mercalli intensity scale; (3) Zone 2A - moderate damage; corresponds to intensity VII of the modified Mercalli intensity scale; (4) Zone 2B - slightly more damage than 2A; (5) Zone 3 - major damage; corresponds to intensity VII and higher of the modified Mercalli intensity scale; (6) Zone 4 – areas within Zone 3 determined by proximity to certain fault systems.

Short-Term. Transitory effects of the proposed program that are of limited duration and are generally caused by construction activities or operations start-up.

Shrink-Swell Potential. Refers to the potential for soils to contract while drying and to expand after wetting.

Significance. As used in NEPA actions, requires consideration of both context and intensity of the environmental effects of an action including the geographic extent of the action; duration of the action's effects; the risk of controversial or highly uncertain or unique and unknown environmental impacts; whether the action is related to other actions with individually insignificant but cumulative significant impacts; and whether the action threatens a violation of federal, state, or local laws and regulations.

Silt. A sedimentary material consisting of fine mineral particles intermediate in size between sand and clay.

Site. As it relates to cultural resources, any location where humans have altered the terrain or discarded artifacts.

Special Use Airspace. Airspace of defined dimensions identified by an area on the surface of the earth wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not part of those activities.

State Historic Preservation Officer (SHPO). The official within each state, authorized by the state at the request of the Secretary of the Interior, to act as liaison for purposes of implementing the NHPA.

Sulfur Dioxide (SO_2). A toxic gas that is produced when fossil fuels, such as coal and oil, are burned. SO_2 is the main pollutant involved in the formation of acid rain. SO_2 also can irritate the upper respiratory tract and cause lung damage. The major source of SO_2 in the United States is coal-burning electric utilities.

Superfund Amendments and Reauthorization Act. SARA was enacted in 1986 to increase the Superfund to 8.5 billion dollars, to modify contaminated site cleanup criteria scheduling, and to revise settlement procedures. It also provides a fund for leaking UST cleanups and a broad, new emergency planning and community right-to-know program.

Surface Water. Water on earth’s surface, as distinguished from water in the ground groundwater).

Threatened Species. Plant and wildlife species likely to become endangered in the foreseeable future.

Toxic Substances Control Act. TSCA provides authority to test and regulate chemicals to protect human health. Substances regulated under TSCA include asbestos and PCBs.

Unconfined Aquifer. A permeable geological unit having the following properties: a water-filled pore space (saturated), the capability to transmit significant quantities of water under ordinary differences in pressure, and an upper water boundary that is at atmospheric pressure.

Unemployment Rate. The number of civilians, as a percentage of the total civilian labor force, who are without jobs, but who are actively seeking employment.

U.S. Environmental Protection Agency. The independent federal agency established in 1970 to regulate federal environmental matters and to oversee the implementation of federal environmental laws.

Utility Systems. For purposes of this document, utility systems consist of water supply and distribution, wastewater collection and treatment, solid waste collection and disposal, and energy supply and distribution.

Volatile Organic Compound (VOC). Compounds containing carbon, excluding CO, CO_2, carbonic acid, metallic carbides, metallic carbonates, and ammonium carbonate.

Water Resources. Includes underground and surface sources of water for the area, and the quality of that water.

Wetlands. Areas that are inundated or saturated with surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil. This classification includes swamps, marshes, bogs, and similar areas. Jurisdictional wetlands are those wetlands that meet the hydrophytic vegetation, hydric soils, and wetland hydrology criteria under normal circumstances (or meet the special circumstances as described in the U.S. Army Corps of Engineers, 1987, wetland delineation manual where one or more of these criteria may be absent and are a subset of "waters of the United States").

Zoning. The division of a municipality (or county) into districts for the purpose of regulating land use, types of building, required yards, necessary off-street parking, and other prerequisites to development. Zones are generally shown on a map and the text of the zoning ordinance specifies requirements for each zoning category.

This page intentionally left blank.

CHAPTER 12.0
INDEX

A

aboveground storage tank (AST), xiii, 3.11-4, 3.11-9

Accident Potential Zone (APZ), 1-15, 3.1-2, 3.10-1, 3.10-5, 4.10-2, 4.10-9

Advisory Council on Historic Preservation (ACHP), 2-30, 3.5-7, 3.5-11, 4.5-1, 4.5-6, 4.5-7, 6-8

Air Installation Compatible Use Zone (AICUZ), 14, 15, 29, 1-5, 1-15, 1-17, 1-20, 2-30, 2-43, 2-45, 2-54, 2-55, 2-69, 3.1-1, 3.1-2, 3.2-4, 3.2-5, 3.2-6, 3.2-8, 3.2-9, 3.2-10, 3.3-16, 3.10-4, 3.10-5, 4.1-1, 4.1-2, 4.1-6, 4.1-7, 4.1-8, 4.1-13, 4.2-1, 4.2-3, 4.2-5, 4.2-6, 4.2-9, 4.2-10, 4.2-11, 4.2-12, 4.2-13, 4.2-14, 4.2-15, 4.2-16, 4.3-6, 4.3-11

aquifer, 3.5-11, 3.6-19, 3.7-1, 3.7-4, 3.7-13, 3.7-15, 3.7-16, 3.7-17, 4.7-2, 4.7-3, 4.7-5, 4.7-6, 4.7-7, 4.7-12, 4.7-13

asbestos-containing material (ACM), 3.11-2, 3.11-3, 3.11-8

B

best management practice (BMP), 29, 2-69, 3.7-4, 4.7-4

Biological Opinion (BO), 17, 19, 29, 31, 1-14, 1-21, 2-2, 2-30, 2-57, 2-59, 2-69, 3.4-3, 3.4-4, 3.4-6, 3.4-7, 3.4-17, 3.4-30, 3.4-31, 3.4-32, 4.4-1, 4.4-7, 4.4-8, 4.4-14, 4.4-15, 4.4-21, 4.4-22, 4.4-23, 4.4-27, 4.4-28, 4.4-29, 4.4-30, 4.4-32, 4.4-33, 4.4-37, 4.4-38, 4.4-39, 4.4-40, 4.4-41, 4.4-42, 4.4-43, 4.4-46, 4.4-52, 4.4-54, 4.4-57, 4.4-58, 4.4-60, 4.4-61, 4.4-63, 4.4-64

Bird Aircraft Strike Hazard (BASH), 3.4-5, 3.10-1, 3.10-7, 4.4-5, 4.4-6, 4.4-32, 4.4-42, 4.4-43, 4.10-2, 4.10-4, 4.10-5, 4.10-6, 4.10-9, 4.10-11, 4.10-12, 4.10-13

Bird Aircraft Strike Hazard BASH, 27, 29, 2-67, 2-69, 4.10-7, 4.10-14

Bureau of Land Management (BLM), 1, 2, 3, 7, 13, 21, 29, 1-1, 1-2, 1-4, 1-5, 1-8, 1-17, 1-21, 2-1, 2-3, 2-5, 2-27, 2-29, 2-37, 2-38, 2-42, 2-43, 2-44, 2-46, 2-53, 2-61, 2-69, 3.1-14, 3.1-15, 3.1-16, 3.1-19, 3.1-20, 3.4-2, 3.4-23, 3.4-24, 3.4-25, 3.4-28, 3.4-29, 3.4-31, 3.5-1, 3.5-7, 3.6-1, 3.6-12, 3.6-13, 3.7-5, 3.7-15, 3.9-6, 3.10-1, 4.1-2, 4.1-6, 4.1-8, 4.1-11, 4.1-12, 4.4-11, 4.4-15, 4.4-26, 4.4-28, 4.4-31, 4.4-35, 4.4-39, 4.4-46, 4.4-57, 4.4-58, 4.4-61, 4.5-2, 4.5-6, 4.5-9, 4.5-12, 4.5-13, 4.5-16, 4.5-23, 4.5-25, 4.7-5, 4.7-12, 4.10-2, 4.10-5, 4.10-9, 4.10-10, 4.10-13, 5-1, 6-2, 6-4, 6-11, 8-1, 9-2, 10-1

C

California Air Resources Board (CARB), 3.3-4, 3.3-6, 3.3-10, 3.3-13, 6-2

California Ambient Air Quality Standards (CAAQS), 16, 29, 2-56, 2-69, 3.3-5, 3.3-10

carbon dioxide (CO_2), 2-21, 3.3-2, 3.3-17, 3.3-18, 4.3-4, 4.3-5

carbon dioxide equivalent (CO_2e), 3.3-2, 3.3-16, 4.3-2, 4.3-4, 4.3-8

carbon monoxide (CO), 3.3-1, 3.3-3, 3.3-5, 3.3-8, 3.3-10, 3.3-16, 3.6-15, 4.3-1, 4.3-2

Clean Air Act (CAA), 3.3-3, 3.3-5, 3.3-8, 3.3-11, 3.3-13, 3.3-17, 3.11-3, 4.3-1, 4.3-3, 4.3-4, 4.3-5

Clear Zone, 3.10-5

Code of Federal Regulations (CFR), 22, 29, 1-1, 1-4, 1-9, 1-10, 2-2, 2-44, 2-62, 2-69, 3.2-12, 3.4-1, 3.4-5, 3.4-25, 3.4-29, 3.5-1, 3.5-6, 3.5-7, 3.5-8, 3.5-9, 3.7-3, 3.7-5, 3.11-1, 3.11-2, 3.11-3, 3.11-4, 1, 4.3-1, 4.4-5, 4.4-29, 4.4-30, 4.4-58, 4.4-59, 4.5-1, 4.5-3, 4.5-9, 4.5-11, 4.5-12, 4.5-17, 4.5-26, 5-2, 6-12

Cold War, 3.5-4, 6-6

community noise equivalent level (CNEL), 3.2-2, 3.2-3, 3.2-4, 3.2-6, 3.2-8, 3.2-9, 3.2-10, 3.2-11, 3.2-17, 4.2-1, 4.2-2, 4.2-4, 4.2-5, 4.2-6, 5-2

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 3.7-3, 3.11-1, 3.11-5

Comprehensive Land Use Management Plan (CLUMP), 1, 2, 3, 6, 7, 14, 18, 20, 23, 25, 26, 28, 29, 1-1, 1-2, 1-5, 1-6, 1-7, 1-9, 1-13, 1-14, 1-20, 2-1, 2-2, 2-4, 2-5, 2-6, 2-29, 2-30, 2-36, 2-43, 2-54, 2-58, 2-60, 2-63, 2-65, 2-66, 2-68, 2-69, 3.1-1, 3.1-2, 3.1-3, 3.2-9, 3.4-2, 3.4-4, 3.4-5, 3.4-7, 3.4-37, 3.5-8, 3.5-9, 4.1-1, 4.1-2, 4.1-5, 4.1-6, 4.1-7, 4.1-10, 4.1-11, 4.1-12, 4.1-13, 4.2-2, 4.2-5, 4.2-9, 4.2-11, 4.2-12, 4.2-13, 4.2-15, 4.2-16, 4.3-5, 4.3-6, 4.3-9, 4.3-10, 4.3-11, 4.3-12, 4.3-13, 4.4-1, 4.4-3, 4.4-14, 4.4-27, 4.4-28, 4.4-37, 4.4-38, 4.4-39, 4.4-40, 4.4-41, 4.4-46, 4.4-57, 4.4-60, 4.4-61, 4.4-63, 4.4-64, 4.5-2, 4.5-9, 4.5-10, 4.5-15, 4.5-18, 4.5-21, 4.5-24, 4.5-27, 4.6-1, 4.6-3, 4.6-4, 4.6-5, 4.6-6, 4.6-7, 4.6-8, 4.7-1, 4.7-3, 4.7-4, 4.7-5, 4.7-8, 4.7-9, 4.7-11, 4.7-14, 4.7-15, 4.8-1, 4.8-2, 4.8-3, 4.8-4, 4.8-5, 4.8-6, 4.8-7, 4.9-1, 4.9-2, 4.9-3, 4.9-4, 4.9-5, 4.9-6, 4.9-7, 4.10-1, 4.10-4, 4.10-6, 4.10-8, 4.10-11, 4.10-13, 4.10-15, 4.11-1, 4.11-4, 4.11-6, 4.11-7, 4.11-9, 4.11-11, 4.11-12, 4.12-1, 4.12-4, 4.12-5, 4.12-6, 4.12-8, 4.12-9, 4.12-10, 6-13

Council on Environmental Quality (CEQ), 1-1, 1-9, 1-10, 1-13, 2-2, 2-43, 1, 4.3-5, 4.3-7, 4.3-9, 4.5-1, 6-3

cumulative impacts, 1-17, 2-46, 3.3-3, 1, 4.1-5, 4.1-11, 4.2-9, 4.2-10, 4.2-12, 4.2-13, 4.2-14, 4.2-16, 4.3-5, 4.3-6, 4.3-7, 4.3-11, 4.4-1, 4.4-32, 4.4-39, 4.4-59, 4.4-61, 4.5-11, 4.5-15, 4.5-21, 4.5-22, 4.6-3, 4.6-6, 4.6-7, 4.6-8, 4.7-6, 4.7-11, 4.7-13, 4.8-3, 4.8-5, 4.8-6, 4.9-3, 4.9-5, 4.9-6, 4.10-4, 4.10-11, 4.10-13, 4.11-5, 4.11-6, 4.11-9, 4.11-10, 4.11-11, 4.12-8, 4.12-9

C-weighted DNL (CDNL), 3.2-3, 3.2-4, 3.2-5, 3.2-10, 3.2-13, 3.2-14, 3.2-17, 4.2-2, 4.2-6, 4.2-7, 4.2-11

D

day-night sound level (DNL), xiii, 3.2-2, 3.2-3, 3.2-4, 3.2-11, 4.2-7, 4.2-11

Department of Defense (DoD), xiv, 2, 3, 4, 7, 1-1, 1-2, 1-4, 1-6, 1-7, 1-9, 1-14, 1-17, 1-20, 1-21, 2-1, 2-3, 2-4, 2-5, 2-6, 2-43, 2-46, 3.1-2, 3.1-6, 3.1-11, 3.2-3, 3.2-4, 3.2-5, 3.2-9, 3.2-12, 3.2-13, 3.4-5, 3.4-7, 3.5-6, 3.5-7, 3.5-8, 3.9-4, 3.9-5, 3.9-6, 3.9-8, 3.10-4, 3.10-5, 3.10-13, 3.10-17, 3.10-18, 3.11-2, 3.11-5, 3.11-9, 4.2-1, 4.2-2, 4.2-9, 4.2-13, 4.4-19, 4.4-20, 4.4-31, 4.4-50, 4.5-9, 4.8-1, 4.8-3, 6-3

Department of the Interior (DoI), 1-5, 2-4, 2-37, 2-42, 2-43, 3.1-3, 3.1-20, 3.4-5, 6-4

Department of Toxic Substances Control (DTSC), 3.11-2, 3.11-6, 3.11-7, 4.11-1

Department of Transportation (DOT), 3.2-4

desert tortoise, 16, 17, 19, 31, 1-14, 2-29, 2-56, 2-57, 2-59, 3.4-3, 3.4-4, 3.4-7, 3.4-13, 3.4-16, 3.4-19, 3.4-22, 3.4-29, 3.4-30, 3.4-31, 3.4-32, 3.4-33, 3.4-36, 3.4-37, 3.4-38, 3.4-39, 3.4-40, 3.4-41, 4.4-1, 4.4-4, 4.4-5, 4.4-6, 4.4-7, 4.4-8, 4.4-12, 4.4-14, 4.4-16, 4.4-17, 4.4-18, 4.4-19, 4.4-20, 4.4-21, 4.4-23, 4.4-25, 4.4-26, 4.4-27, 4.4-29, 4.4-30, 4.4-31, 4.4-32, 4.4-33, 4.4-34, 4.4-35, 4.4-36, 4.4-37, 4.4-38, 4.4-39, 4.4-40, 4.4-41, 4.4-42, 4.4-43, 4.4-46, 4.4-47, 4.4-48, 4.4-49, 4.4-50, 4.4-51, 4.4-52, 4.4-53, 4.4-54, 4.4-56, 4.4-57, 4.4-58, 4.4-60, 4.4-61, 4.4-63, 4.4-64

Desert Wildlife Management Area (DWMA), 3.4-19

directed energy (DE), xiv, 3, 4, 9, 1-7, 1-8, 2-1, 2-4, 2-5, 2-6, 2-7, 2-8, 2-9, 2-10, 2-12, 2-16, 2-20, 2-21, 2-30, 2-33, 2-41, 2-49, 3.1-11, 4.1-1, 4.1-4, 4.1-8, 4.1-10, 4.2-2, 4.2-7, 4.3-5, 4.4-1, 4.4-2, 4.4-3, 4.4-16, 4.4-47, 4.4-48, 4.5-1, 4.5-2, 4.5-5, 4.5-20, 4.6-1, 4.6-2, 4.6-6, 4.7-1, 4.8-1, 4.9-1, 4.10-1, 4.11-1, 4.11-4, 4.11-9, 4.12-1

E

easement, 1-16, 2-45, 3.1-3, 3.1-6, 3.1-15, 3.9-3, 3.10-7

Emergency Planning and Community Right to Know Act (EPCRA), 3.11-1, 3.11-5, 3.11-6

Emissions and Dispersion Modeling System (EDMS), 3.3-15, 6-4

employment, 23, 25, 1-4, 1-8, 2-63, 2-65, 3.1-11, 3.8-1, 3.8-11, 3.8-13, 3.10-4, 3.10-10, 4.8-1, 4.8-2, 4.8-3, 4.8-4, 4.8-5, 4.8-6, 4.12-1

endangered species, 1-16, 2-30, 3.4-1, 3.4-3, 3.4-5, 3.4-7, 3.4-15, 3.4-22, 3.4-23, 3.4-36, 3.4-38, 4.4-1, 4.4-2, 4.4-3, 4.4-32, 4.4-35, 4.4-38, 4.4-60, 4.6-1, 5-1

Endangered Species Act (ESA), 3.4-1, 3.4-3, 3.4-4, 3.4-19, 3.4-38, 4.4-2, 4.4-13, 4.4-23, 4.4-30, 4.4-31, 4.4-39, 4.4-45, 4.4-53, 4.4-58, 4.4-59, 4.4-61

erosion, 3.3-11, 3.4-25, 3.6-4, 3.7-4, 4.4-13, 4.6-1, 4.6-2, 4.6-3, 4.6-4, 4.6-5, 4.6-6, 4.6-7, 4.6-8, 4.7-4, 4.7-5, 4.7-8, 4.7-11

Explosive Ordnance Disposal (EOD), 10, 1-4, 2-24, 2-35, 2-42, 2-46, 2-50, 3.1-12, 3.1-13, 3.10-19, 4.1-3, 4.1-4, 4.1-5, 4.1-9, 4.2-7, 4.2-9, 4.2-14, 4.3-6, 4.3-11, 4.4-6, 4.4-14, 4.4-28, 4.4-32, 4.4-46, 4.5-10, 4.5-13, 4.5-20, 4.5-21, 4.6-3, 4.6-6, 4.7-1, 4.7-5, 4.7-11, 4.8-2, 4.8-5, 4.10-4, 4.10-11, 4.11-3, 4.11-4, 4.11-8, 4.11-10, 4.12-5, 4.12-9, 6-1, 9-1

explosive safety quantity distance (ESQD), 3.10-7, 3.10-8, 3.10-9, 4.10-2, 4.10-3, 4.10-5, 4.10-9, 4.10-10, 4.10-13

F

Federal, xiv

Federal Aviation Administration (FAA), xiv, 2-45, 3.2-3, 3.3-15, 3.9-7, 3.10-2, 3.10-3, 3.10-4, 3.10-18, 6-4, 9-2

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 3.11-4

Federal Land Policy and Management Act (FLPMA), 2, 1-2, 1-5, 2-43, 3.1-20, 3.4-4, 3.4-7, 3.5-7, 4.4-10, 4.4-31, 4.4-45, 5-1

fire management, 19, 1-20, 1-21, 2-59, 3.4-30, 3.4-31, 3.4-32, 3.9-7, 4.4-9, 4.4-28, 4.4-29, 4.4-30, 4.4-35, 4.4-37, 4.4-38, 4.4-41, 4.4-44, 4.4-58, 4.4-61, 4.4-64, 4.10-1, 6-14

floodplain, 3.6-9, 3.7-9

G

geothermal, 6, 20, 1-4, 1-5, 1-14, 1-16, 1-20, 2-4, 2-27, 2-43, 2-44, 2-60, 3.1-9, 3.1-14, 3.3-2, 3.5-11, 3.6-1, 3.6-12, 3.6-13, 3.6-15, 3.6-18, 3.6-19, 3.6-20, 3.6-21, 3.7-4, 3.7-9, 3.9-3, 3.9-4, 3.9-6, 4.1-5, 4.1-11, 4.2-9, 4.2-13, 4.2-14, 4.3-6, 4.3-7, 4.3-11, 4.4-24, 4.4-25, 4.4-31, 4.4-55, 4.5-6, 4.5-7, 4.5-10, 4.5-14, 4.5-15, 4.5-21, 4.5-23, 4.6-2, 4.6-4, 4.6-6, 4.6-7, 4.7-4, 4.7-5, 4.7-8, 4.7-11, 4.7-12, 4.7-14, 4.8-2, 4.8-4, 4.8-5, 4.9-2, 4.9-5, 4.10-3, 4.11-4, 4.11-5, 4.11-9, 4.11-10, 4.12-2, 4.12-4, 4.12-7, 4.12-8, 6-12

golf course, 13, 2-27, 2-43, 2-53, 3.1-14, 3.4-14, 3.4-16, 3.4-17, 3.7-9, 3.9-2, 3.9-3, 3.9-8, 4.4-25, 4.4-56, 4.5-8, 4.5-15, 4.5-23

greenhouse gas (GHG), xiv, 3.3-2, 3.3-3, 4.3-4, 4.3-5, 4.3-7, 4.3-9

ground troop training (GTT), xiv, 4, 5, 10, 16, 22, 29, 2-6, 2-20, 2-22, 2-23, 2-24, 2-25, 2-33, 2-34, 2-35, 2-38, 2-42, 2-51, 2-56, 2-62, 2-69, 3.1-3, 3.1-10, 3.1-12, 3.2-13, 3.3-14, 3.3-15, 3.5-17, 3.5-18, 3.12-1, 4.1-1, 4.1-4, 4.1-9, 4.2-7, 4.3-1, 4.4-14, 4.4-15, 4.4-16, 4.4-46, 4.4-47, 4.5-4, 4.5-12, 4.5-13, 4.5-17, 4.5-20, 4.5-22, 4.5-26, 4.6-1, 4.6-2, 4.6-4, 4.6-5, 4.6-6, 4.6-7, 4.7-1, 4.7-3, 4.7-8, 4.7-10, 4.8-1, 4.9-1, 4.9-5, 4.10-3, 4.10-10, 4.11-1, 4.11-2, 4.11-3, 4.11-7, 4.11-9, 4.12-1, 4.12-2, 4.12-7

groundwater, 23, 24, 1-16, 2-46, 2-63, 2-64, 3.1-19, 3.4-17, 3.4-23, 3.6-12, 3.6-15, 3.6-18, 3.6-19, 3.7-1, 3.7-4, 3.7-5, 3.7-8, 3.7-12, 3.7-13, 3.7-15, 3.7-16, 3.9-1, 3.11-2, 3.11-8, 3.11-9, 4.7-1, 4.7-2, 4.7-3, 4.7-4, 4.7-5, 4.7-6, 4.7-7, 4.7-8, 4.7-9, 4.7-10, 4.7-11, 4.7-12, 4.7-13, 4.7-14, 4.7-15

H

habitat, 8, 17, 18, 19, 30, 31, 1-6, 1-14, 1-16, 2-29, 2-47, 2-57, 2-58, 2-59, 3.4-1, 3.4-2, 3.4-3, 3.4-4, 3.4-5, 3.4-6, 3.4-7, 3.4-12, 3.4-13, 3.4-14, 3.4-15, 3.4-16, 3.4-17, 3.4-19, 3.4-22, 3.4-23, 3.4-25, 3.4-28, 3.4-29, 3.4-30, 3.4-31, 3.4-32, 3.4-33, 3.4-36, 3.4-37, 3.4-38, 3.4-39, 3.4-40, 3.4-41, 3.4-42, 3.7-1, 3.7-8, 3.10-7, 4.4-2, 4.4-3, 4.4-4, 4.4-5, 4.4-6, 4.4-8, 4.4-9, 4.4-10, 4.4-11, 4.4-12, 4.4-13, 4.4-14, 4.4-15, 4.4-16, 4.4-17, 4.4-18, 4.4-19, 4.4-20, 4.4-21, 4.4-22, 4.4-23, 4.4-24, 4.4-25, 4.4-26, 4.4-27, 4.4-28,

4.4-29, 4.4-30, 4.4-32, 4.4-33, 4.4-34, 4.4-35, 4.4-36, 4.4-37, 4.4-38, 4.4-39, 4.4-40, 4.4-41, 4.4-42, 4.4-43, 4.4-44, 4.4-45, 4.4-46, 4.4-47, 4.4-48, 4.4-49, 4.4-50, 4.4-51, 4.4-52, 4.4-53, 4.4-54, 4.4-55, 4.4-56, 4.4-57, 4.4-58, 4.4-59, 4.4-60, 4.4-61, 4.4-63, 4.4-64, 4.6-1

Haiwee Geothermal Leasing Area (HGLA), xv, 2-44

hazardous air pollutants (HAPs), xv, 3.3-12, 3.3-13

high-energy laser (HEL), xv, 4, 9, 2-7, 2-8, 2-12, 2-13, 2-21, 2-22, 2-33, 2-49, 4.1-4, 4.2-7, 4.2-11, 4.4-16, 4.4-17, 4.4-18, 4.4-19, 4.4-47, 4.4-48, 4.4-49, 4.4-50, 4.5-5, 4.5-20, 4.7-1, 4.10-3, 4.10-6, 4.10-10, 4.10-13, 4.11-4

high-powered microwave (HPM), xv, 4, 9, 2-9, 2-12, 2-21, 2-22, 2-33, 2-49, 3.10-7, 3.10-13, 4.1-4, 4.2-7, 4.2-11, 4.4-16, 4.4-19, 4.4-20, 4.4-21, 4.4-47, 4.4-50, 4.4-51, 4.4-52, 4.5-5, 4.5-20, 4.7-1, 4.10-3, 4.10-6, 4.10-9, 4.10-13, 4.11-4

housing, 25, 2-65, 3.1-10, 3.1-12, 3.1-16, 3.1-19, 3.2-9, 3.4-16, 3.4-17, 3.5-3, 3.5-7, 3.7-9, 3.8-1, 3.8-2, 3.8-9, 3.9-8, 4.2-7, 4.4-26, 4.4-56, 4.8-1, 4.8-2, 4.8-3, 4.8-4, 4.8-5, 4.8-6

I

Indian Wells Valley Water District (IWVWD), xv, 3.7-5, 3.7-15, 3.7-16, 3.9-1, 4.7-5, 4.7-12

Installation Restoration Program (IRP), xv, 3.7-13, 3.11-1, 3.11-5, 3.11-7, 3.11-8, 4.11-1, 4.11-2, 4.11-7

Integrated Cultural Resources Management Plan (ICRMP), xv, 21, 29, 1-1, 1-5, 1-7, 1-14, 1-20, 1-21, 2-1, 2-2, 2-30, 2-43, 2-61, 2-69, 3.1-1, 3.1-2, 3.5-1, 3.5-8, 3.5-9, 3.5-10, 4.5-1, 4.5-2, 4.5-4, 4.5-5, 4.5-6, 4.5-8, 4.5-9, 4.5-10, 4.5-11, 4.5-12, 4.5-13, 4.5-14, 4.5-15, 4.5-16, 4.5-18, 4.5-20, 4.5-21, 4.5-23, 4.5-24, 4.5-25, 4.5-26, 4.8-2

Integrated Natural Resources Management Plan (INRMP), xv, 16, 17, 18, 31, 1-1, 1-5, 1-6, 1-7, 1-13, 1-14, 1-15, 1-20, 2-1, 2-30, 2-36, 2-43, 2-56, 2-57, 2-58, 3.1-1, 3.1-2, 3.4-2, 3.4-4, 3.4-5, 3.4-7, 3.4-25, 3.4-28, 3.4-31, 3.4-32, 3.4-37, 3.5-9, 4.4-3, 4.4-6, 4.4-10, 4.4-11, 4.4-12, 4.4-13, 4.4-14, 4.4-22, 4.4-24, 4.4-28, 4.4-31, 4.4-32, 4.4-33, 4.4-37, 4.4-38, 4.4-39, 4.4-40, 4.4-41, 4.4-45, 4.4-46, 4.4-54, 4.4-59, 4.4-60, 4.4-61, 4.4-63, 4.4-64, 4.7-4, 4.7-11, 4.8-2, 6-13

Inyo California Towhee, 30, 3.4-1, 3.4-3, 3.4-4, 3.4-13, 3.4-14, 3.4-16, 3.4-22, 3.4-23, 3.4-24, 3.4-29, 3.4-38, 3.4-39, 4.4-1, 4.4-5, 4.4-8, 4.4-11, 4.4-12, 4.4-14, 4.4-15, 4.4-16, 4.4-18, 4.4-19, 4.4-20, 4.4-22, 4.4-23, 4.4-25, 4.4-30, 4.4-38, 4.4-39, 4.4-41, 4.4-42, 4.4-44, 4.4-46, 4.4-47, 4.4-49, 4.4-50, 4.4-51, 4.4-52, 4.4-54, 4.4-56, 4.4-58, 4.4-60, 4.4-61, 4.4-64, 6-6, 6-12

K

Known Geothermal Resource Area (KGRA), xv, 1-9, 2-27, 2-43, 2-44, 3.1-14, 3.6-1, 3.6-14, 3.6-15, 3.7-13, 3.9-3, 4.1-5, 4.1-11, 4.4-25, 4.4-31, 4.4-55, 4.5-10, 4.5-15, 4.5-21, 4.11-5, 4.11-10, 4.12-4, 4.12-8

L

land management unit (LMU), xv, 20, 29, 2-23, 2-27, 2-34, 2-60, 2-69, 3.1-6, 3.1-14, 3.4-19, 3.4-23, 3.4-29, 3.4-33, 3.4-36, 3.4-37, 3.4-38, 3.4-39, 3.4-40, 3.4-41, 3.4-42, 3.5-18, 3.5-20, 3.5-22, 3.5-23, 3.5-24, 3.6-2, 3.6-4, 3.7-12, 3.7-17, 3.9-6, 3.10-19, 3.11-8, 4.4-6, 4.4-8, 4.4-9, 4.4-18, 4.4-25, 4.4-42, 4.4-43, 4.4-46, 4.4-49, 4.4-55, 4.5-4, 4.5-6, 4.5-7, 4.5-14, 4.6-2, 4.7-2, 4.7-7, 4.7-10

landfill, 3.9-4, 3.11-3, 3.11-8, 3.11-9

lead-based paint, 3.11-4

least Bell's vireo, 1-14, 3.4-23, 4.4-1, 4.4-5, 4.4-8, 4.4-14, 4.4-18, 4.4-20, 4.4-21, 4.4-23, 4.4-38, 4.4-42, 4.4-43, 4.4-44, 4.4-46, 4.4-49, 4.4-51, 4.4-52, 4.4-54, 4.4-60

level of service (LOS), xv, 29, 2-69, 3.12-7, 3.12-8, 3.12-9, 3.12-10, 3.12-11, 4.12-1, 4.12-2, 4.12-3, 4.12-4, 4.12-5, 4.12-7, 4.12-8, 4.12-9

M

material potentially presenting an explosive hazard (MPPEH), xv, 28, 29, 2-1, 2-5, 2-43, 2-68, 2-69, 3.10-18, 3.10-19, 4.7-2, 4.7-3, 4.7-7, 4.10-2, 4.10-3, 4.10-5, 4.10-8, 4.10-9, 4.10-10, 4.10-12, 4.10-15, 4.11-2, 4.11-4, 4.11-7, 4.11-8

Memorandum of Agreement (MOA), xv, 6, 1-18, 1-19, 2-4, 2-27, 3.1-14, 3.1-16, 3.4-28, 3.5-10, 3.5-11, 3.5-12, 3.6-18, 4.1-4, 4.1-10, 4.4-24, 4.4-55, 4.5-6, 4.5-7, 4.5-9, 4.5-14, 4.5-23, 4.12-2, 4.12-7

Memorandum of Understanding (MOU), xv, 3.6-1

Migratory Bird Treaty Act (MBTA), xv, 18, 29, 2-58, 2-69, 3.4-1, 3.4-5, 3.4-23, 4.4-3, 4.4-5, 4.4-6, 4.4-13, 4.4-14, 4.4-16, 4.4-21, 4.4-23, 4.4-24, 4.4-27, 4.4-30, 4.4-37, 4.4-38, 4.4-40, 4.4-42, 4.4-45, 4.4-47, 4.4-50, 4.4-51, 4.4-52, 4.4-53, 4.4-55, 4.4-57, 4.4-59, 4.4-60, 4.4-63

Military Munitions Response Program (MMRP), xv, 3.11-1, 3.11-5, 3.11-8

Military Munitions Rule (MMR), xv, 3.11-2, 3.11-7

Mohave tui chub, 3.4-3, 3.4-6, 3.4-13, 3.4-16, 3.4-17, 4.4-1, 4.4-6, 4.4-12, 4.4-14, 4.4-17, 4.4-19, 4.4-21, 4.4-23, 4.4-25, 4.4-29, 4.4-38, 4.4-43, 4.4-46, 4.4-48, 4.4-50, 4.4-52, 4.4-53, 4.4-56, 4.4-60

N

National Ambient Air Quality Standards (NAAQS), xv, 16, 29, 2-56, 2-69, 3.3-3, 3.3-5, 3.3-10, 3.3-13, 4.3-3

National Emissions Standards for Hazardous Air Pollutants (NESHAP), xvi, 3.11-3

National Environmental Policy Act (NEPA), xvi, 1, 18, 29, 1-1, 1-5, 1-9, 1-10, 1-13, 1-15, 1-17, 2-1, 2-2, 2-3, 2-29, 2-58, 2-69, 3.2-17, 3.4-29, 3.5-6, 3.5-7, 3.5-9, 3.6-21, 1, 4.1-8, 4.3-1, 4.3-3, 4.3-4, 4.3-5, 4.4-2, 4.4-11, 4.4-29, 4.4-31, 4.4-32, 4.4-36, 4.4-37, 4.4-40, 4.4-63, 4.5-1, 4.5-8, 5-1, 5-2, 6-3, 8-1, 8-2, 8-3

National Historic Preservation Act (NHPA), xvi, 3.5-6, 3.5-7, 3.5-10, 3.5-17, 4.5-1, 4.5-8, 4.5-11, 4.5-15, 4.5-22

National Pollutant Discharge Elimination System (NPDES), xvi, 3.7-2, 3.7-3, 3.7-4

Native American, 2, 6, 7, 13, 29, 1-5, 1-14, 1-15, 1-16, 1-17, 2-4, 2-27, 2-45, 2-53, 2-69, 3.1-6, 3.1-14, 3.5-2, 3.5-4, 3.5-5, 3.5-6, 3.5-7, 3.5-8, 3.5-9, 3.5-10, 3.5-11, 3.5-12, 4.1-4, 4.1-10, 4.2-9, 4.2-13, 4.3-6, 4.3-11, 4.4-11, 4.4-24, 4.4-39, 4.4-55, 4.4-61, 4.5-1, 4.5-2, 4.5-3, 4.5-6, 4.5-7, 4.5-10, 4.5-13, 4.5-14, 4.5-15, 4.5-19, 4.5-21, 4.5-22, 4.5-23, 4.6-2, 4.6-6, 4.7-4, 4.7-11, 4.8-2, 4.8-4, 4.9-2, 4.9-5, 4.10-3, 4.10-4, 4.10-6, 4.10-10, 4.10-13, 4.11-4, 4.11-9, 4.12-2, 4.12-7, 7-1, 7-2, 9-3, 10-3

Native American Graves Protection and Repatriation Act (NAGPRA), 22, 29, 2-62, 2-69, 3.5-6, 3.5-8, 3.5-9, 4.5-8, 4.5-12, 4.5-17, 4.5-26

Naval Air Systems Command (NAVAIR), xvi, 1-4, 1-9, 2-38, 3.1-6, 3.3-15, 3.10-10, 3.10-16, 4.3-1, 4.4-17, 4.4-19, 4.4-27, 4.4-50, 6-8, 6-14, 8-4

Naval Air Warfare Center Weapons Division (NAWCWD), xvi, 5, 1-1, 1-4, 1-5, 1-7, 1-8, 1-9, 2-5, 2-6, 2-20, 2-22, 2-27, 2-30, 2-33, 2-43, 2-53, 3.1-1, 3.1-13, 3.1-15, 3.1-20, 3.2-11, 3.2-12, 3.3-16, 3.5-18, 3.5-20, 3.5-22, 3.5-23, 3.5-24, 3.10-3, 3.10-4, 3.10-16, 3.10-17, 4.3-1, 4.4-16, 4.4-17, 4.4-18, 4.4-20, 4.4-21, 4.4-48, 4.4-51, 4.5-4, 4.5-11, 4.5-19, 6-8, 7-1, 8-1, 9-1

Naval Facilities Engineering Command (NAVFAC), xvi, 1-4, 3.3-2, 3.3-3, 3.5-10, 3.10-5, 6-8, 7-1, 9-1

Naval Sea Systems Command (NAVSEA), xvi, 3.10-3, 3.10-7, 3.10-10, 3.10-16, 4.4-17, 4.4-19, 4.4-27, 4.4-50, 6-8

nitrogen dioxide (NO_2), xvi, 3.3-1, 3.3-3, 3.3-8, 3.3-10

nitrogen oxides (NO_X), xvi, 3.3-1, 3.3-3, 3.3-16, 4.3-2

Notice of Intent (NOI), xvi, 1-10, 1-15, 3.7-4

O

Occupational Safety and Health Administration (OSHA), xvi, 3.11-3

off-highway vehicle (OHV), xvi, 2-29, 3.1-15, 4.4-26, 4.4-57

ozone, 3.3-1, 3.3-3, 3.3-5, 3.3-6, 3.3-10, 3.11-6

P

Pacific Gas & Electric (PG&E), xvi, 3.9-3, 9-5

particulate matter equal to or smaller than 10 microns in diameter (PM_{10}), xvi, 30, 3.3-1, 3.3-3, 3.3-4, 3.3-5, 3.3-6, 3.3-8, 3.3-9, 3.3-10, 3.3-11, 3.3-12, 3.3-13, 3.3-16, 3.3-18, 4.3-2, 4.3-3, 4.3-4, 4.3-5, 4.3-6, 4.3-8

particulate matter equal to or smaller than 2.5 microns in diameter ($PM_{2.5}$), xvi, 3.3-1, 3.3-3, 3.3-4, 3.3-6, 3.3-8, 3.3-10, 3.3-16, 3.3-18, 4.3-2

pesticide, 3.7-4, 3.11-1, 3.11-4, 3.11-9

playa, 3.1-9, 3.3-11, 3.4-8, 3.4-12, 3.4-14, 3.4-25, 3.4-32, 3.4-33, 3.4-36, 3.4-39, 3.4-40, 3.4-41, 3.6-2, 3.6-4, 3.6-6, 3.6-9, 3.7-8, 3.7-9, 3.7-12, 3.7-16, 4.4-9, 4.4-10, 4.4-17, 4.4-22, 4.4-24, 4.4-26, 4.4-42, 4.4-45, 4.4-48, 4.4-53, 4.4-54, 4.4-56

polychlorinated biphenyls (PCBs), xvi, 3.11-1, 3.11-3, 3.11-8

population, 17, 25, 30, 1-7, 2-29, 2-38, 2-57, 2-65, 3.1-15, 3.1-19, 3.2-6, 3.4-2, 3.4-4, 3.4-6, 3.4-16, 3.4-17, 3.4-19, 3.4-22, 3.4-23, 3.4-28, 3.4-29, 3.7-13, 3.8-1, 3.8-2, 3.8-9, 3.8-11, 3.8-14, 3.8-15, 3.8-22, 3.9-1, 3.9-2, 3.9-8, 3.10-7, 4.2-3, 4.2-5, 4.2-6, 4.2-9, 4.2-14, 4.4-2, 4.4-3, 4.4-4, 4.4-5, 4.4-6, 4.4-8, 4.4-10, 4.4-11, 4.4-12, 4.4-13, 4.4-14, 4.4-16, 4.4-17, 4.4-18, 4.4-19, 4.4-20, 4.4-21, 4.4-22, 4.4-23, 4.4-24, 4.4-30, 4.4-33, 4.4-38, 4.4-40, 4.4-42, 4.4-43, 4.4-45, 4.4-47, 4.4-48, 4.4-49, 4.4-50, 4.4-51, 4.4-52, 4.4-53, 4.4-54, 4.4-55, 4.4-59, 4.4-60, 4.4-63, 4.5-4, 4.8-1, 4.8-2, 4.8-3, 4.8-4, 4.8-5, 4.8-6, 4.8-7, 4.8-8, 4.8-9, 4.9-1, 4.9-3, 4.10-2, 4.10-6, 4.10-13, 6-12

Programmatic Agreement (PA), xvi, 1-14, 1-20, 2-30, 2-43, 3.1-1, 3.5-9, 3.5-10, 4.5-1, 4.5-10, 4.5-15, 4.5-21, 4.5-24

R

Range Air Installations Compatible Use Zones (RAICUZ), xvi, 3.2-4, 4.2-2, 6-13

Record of Decision (ROD), xvii, 1-10, 1-13, 1-19, 2-29, 4.4-36

Region of Influence (ROI), xvii, 1, 3.1-1, 3.2-1, 3.3-1, 3.4-1, 3.5-1, 3.6-1, 3.7-1, 3.8-1, 3.8-28, 3.9-1, 3.10-1, 3.11-1, 3.12-1, 4.1-8, 4.2-2, 4.2-11, 4.2-15, 4.3-1, 4.3-6, 4.3-9, 4.3-11, 4.3-12, 4.8-1, 4.8-2, 4.8-3, 4.8-5, 4.8-6, 4.9-5, 4.10-2, 4.10-6, 4.10-13

Resource Conservation and Recovery Act (RCRA), xvii, 3.7-3, 3.10-19, 3.11-1, 3.11-2, 3.11-3, 3.11-4, 3.11-5, 3.11-6, 3.11-7, 3.11-8, 3.11-9, 4.11-1, 4.11-2, 4.11-4, 4.11-7, 4.11-9

S

satellite accumulation point, 3.11-6

socioeconomics, 25, 2-65, 1, 3.8-1, 4.8-1, 4.8-3, 4.8-5, 4.8-6

sound exposure level (SEL), xvii, 3.2-3, 3.2-11, 3.2-12, 3.2-17, 4.2-2

southwestern willow flycatcher, 1-14, 3.4-14, 3.4-23, 4.4-1, 4.4-5, 4.4-8, 4.4-14, 4.4-18, 4.4-20, 4.4-21, 4.4-23, 4.4-38, 4.4-42, 4.4-44, 4.4-46, 4.4-49, 4.4-51, 4.4-52, 4.4-54, 4.4-60

standard operating procedure (SOP), xvii, 27, 29, 2-67, 2-69, 3.1-13, 3.10-1, 3.10-3, 3.10-7, 3.10-16, 3.10-17, 3.10-18, 4.4-17, 4.4-20, 4.4-30, 4.4-48, 4.4-51, 4.4-58, 4.5-4, 4.5-23, 4.10-3, 4.10-5, 4.10-6, 4.10-8, 4.10-9, 4.10-10, 4.10-11, 4.10-12, 4.10-13, 4.10-15

State Historic Preservation Officer (SHPO), xvii, 29, 2-30, 2-69, 3.5-6, 3.5-9, 3.5-10, 3.5-11, 3.5-17, 3.5-18, 4.5-1, 4.5-6, 4.5-7, 4.5-10, 4.5-15, 4.5-24, 6-4

state implementation plan (SIP), xvii, 3.3-8, 3.3-11, 3.3-12, 4.3-1

sulfates (SO_4), xvii, 3.3-5

sulfur dioxide (SO_2), xvii, 3.3-1, 3.3-3, 3.3-4

Superfund Amendment and Reauthorization Act (SARA), xvii, 3.7-3, 3.11-1, 3.11-5

T

Toxic Substances Control Act (TSCA), xvii, 3.11-2, 3.11-3

Traditional Cultural Property (TCP), xvii, 20, 29, 2-60, 2-69, 3.5-2, 3.5-5, 3.5-10, 3.5-17, 4.5-2, 4.5-6, 4.5-7, 4.5-14, 4.5-19, 4.5-23

U

U.S. Army Corps of Engineers (USACE), 3.7-8

U.S. Environmental Protection Agency (USEPA), xvii, 1-1, 1-10, 3.2-3, 3.2-4, 3.3-1, 3.3-4, 3.3-5, 3.3-8, 3.3-11, 3.3-12, 3.3-13, 3.3-15, 3.3-17, 3.7-2, 3.7-3, 3.10-19, 3.11-1, 3.11-2, 3.11-3, 3.11-4, 3.11-5, 3.11-6, 4.3-3, 4.3-4, 4.8-6, 6-11, 6-12

U.S. Fish and Wildlife Service (USFWS), xvii, 19, 29, 1-6, 1-14, 1-21, 2-30, 2-59, 2-69, 3.4-1, 3.4-2, 3.4-3, 3.4-4, 3.4-6, 3.4-15, 3.4-16, 3.4-17, 3.4-19, 3.4-22, 3.4-23, 3.4-30, 3.4-32, 4.4-1, 4.4-3, 4.4-4, 4.4-5, 4.4-6, 4.4-7, 4.4-8, 4.4-15, 4.4-22, 4.4-27, 4.4-30, 4.4-34, 4.4-35, 4.4-36, 4.4-37, 4.4-38, 4.4-39, 4.4-41, 4.4-42, 4.4-43, 4.4-44, 4.4-46, 4.4-57, 4.4-59, 4.4-60, 4.4-61, 4.4-64, 6-12

U.S. Forest Service (USFS), xvii, 3.1-21, 3.4-31, 4.4-28, 4.4-35, 4.4-58

underground storage tank (UST), xvii, 3.11-3, 3.11-4, 3.11-9

unexploded ordnance (UXO), xvii, 28, 29, 1-19, 2-1, 2-5, 2-24, 2-37, 2-43, 2-68, 2-69, 3.1-13, 3.4-31, 3.10-18, 3.10-19, 3.11-1, 3.11-5, 4.4-38, 4.4-61, 4.10-2, 4.10-3, 4.10-5, 4.10-8, 4.10-9, 4.10-10, 4.10-12, 4.10-15

unmanned aerial system (UAS), xvii, 9, 2-20, 2-21, 2-33, 2-41, 2-48, 4.1-2, 4.1-8, 4.4-5, 4.5-3, 4.5-4, 4.5-19

unmanned aerial vehicle (UAV), xvii, 3.1-11, 3.5-24

unmanned ground system (UGS), xvii, 5, 10, 2-21, 2-22, 2-25, 2-33, 2-34, 2-49, 4.1-3, 4.1-9, 4.4-6, 4.11-3, 4.11-8

V

volatile organic compound (VOC), xvii, 3.3-1, 3.3-3, 3.3-16, 4.3-2

W

wastewater treatment plant (WWTP), xvii, 3.9-2, 3.9-3

wetland, 3.4-1, 3.4-25, 3.7-1, 3.7-8

Wild Horse and Burro Management Program (WHBMP), xvii, 1-7, 3.4-5, 4.4-10, 4.4-11, 4.4-12, 4.4-13, 4.4-39, 4.4-45, 4.4-61

World War II (WWII), xvii, 3.5-3

This page intentionally left blank.

APPENDIX A

NOTICE OF INTENT

3810-FF

DEPARTMENT OF DEFENSE

Notice of Intent to Prepare an Environmental Impact Statement/Legislative Environmental Impact Statement for Renewal of the Naval Air Weapons Station China Lake Public Land Withdrawal, California and to Announce Public Scoping Meetings

AGENCY: Department of the Navy, DoD

ACTION: Notice.

SUMMARY: Pursuant to section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969 as implemented by the Council on Environmental Quality Regulations (40 Code of Federal Regulations [CFR] parts 1500-1508), the Department of the Navy (DoN), with the cooperation of the Bureau of Land Management (BLM), announces its intent to prepare an Environmental Impact Statement/Legislative Environmental Impact Statement (EIS/LEIS) to evaluate the potential environmental effects associated with the continued withdrawal of approximately 1.1 million acres of public land in Kern, Inyo, and San Bernardino counties, California. This public land withdrawal comprises the current North and South ranges at Naval Air Weapons Station China Lake (NAWSCL). The proposed land withdrawal extension will allow the DoN to continue defense-related research, development, test and evaluation (RDT&E) and training missions at NAWSCL, in addition to other land uses.

The California Military Lands Withdrawal and Overflights Act of 1994 (Pub. L. 103-433, part of the California Desert Protection Act) withdrew and reserved the lands known then as the China Lake Naval Weapons Center (subsequently renamed NAWSCL) for defense-related purposes for a period of 20 years (until October 14, 2014). The Act provides that the DoN may seek extension of the withdrawal of such lands. As a part of the withdrawal process, the Secretary of the Navy is required to publish a draft EIS addressing the effects of continued withdrawal and hold public hearings in order to receive public comments on the proposal by October 12, 2012. The NAWSCL EIS/LEIS will examine current and proposed land uses in support of the DoN's military mission. The EIS/LEIS will specifically focus on those military land uses granted to the DoN under Pub. L. 103-433 that include: (1) use as an RDT&E laboratory; (2) use as a range for air warfare weapons and weapons systems; (3) use as a high hazard training area for aerial gunnery, rocketry, electronic warfare

and countermeasures, and tactical maneuvering and air support; (4) geothermal leasing and development, and related power production activities; and, (5) other defense-related purposes. The environmental analysis in the EIS/LEIS will be incorporated in an update to the May 2005 NAWSCL Comprehensive Land Use Management Plan (CLUMP). The CLUMP facilitates NAWSCL in planning for and managing land use and environmental resources on the withdrawn public lands in accordance with the Federal Land Policy and Management Act of 1976 (FLPMA) (43 U.S.C. 1701). The updated CLUMP will include an examination of both military land uses authorized under Pub. L. 103-433 and those mission- compatible non-military land uses authorized in the 2005 CLUMP.

DATES AND ADDRESSES: The DoN is initiating a 90-day public scoping process to identify community interests and specific issues to be addressed in the EIS/LEIS. This public scoping process starts with the publication of this Notice of Intent. Three public scoping meetings will be held to receive oral and/or written comments on issues to be addressed in the EIS/LEIS:

1. Tuesday, July 19, 2011, 6:00 p.m. to 8:00 p.m., Historic USO Building, 230 West Ridgecrest Boulevard, Ridgecrest, California 93555;

2. Wednesday, July 20, 2011, 6:00 p.m. to 8:00 p.m., Statham Hall, 138 Jackson Street, Lone Pine, California 93545; and

3. Thursday, July 21, 2011, 6:00 p.m. to 8:00 p.m., Trona Community Senior Center, 13187 Market Street, Trona, California 93562.

Additional information concerning meeting times and locations is available on the NAWSCL EIS/LEIS website at http://www.ChinalakeLEIS.com. Public scoping meeting schedules and locations will also be announced in local newspapers.

Each of the public scoping meetings will consist of an informal, open house session with information stations staffed by DoN and BLM representatives. Comments, both written and oral, will be collected at each of the three public scoping meetings and on the project website.

FOR FURTHER INFORMATION CONTACT: NAWSCL Land Withdrawal EIS/LEIS Project Manager (Attn: Ms. Jo Ellen Anderson), NAVFAC

Southwest, 1220 Pacific Highway, San Diego, CA 92132-5178, telephone number: 619-532-2633.

SUPPLEMENTARY INFORMATION: The NAWSCL North and South ranges are located in the western Mojave Desert, approximately 150 miles northeast of Los Angeles, California. These ranges encompass approximately 1.1 million acres and are located in portions of Inyo, Kern, and San Bernardino counties. The DoN has been operating the NAWSCL land ranges for nearly 70 years.

The California Military Lands Withdrawal and Overflights Act of 1994 authorized the withdrawal of the public lands associated with the NAWSCL ranges for a period of 20 years (until October 14, 2014). The military land uses specifically allowed under the Act included: (1) use as an RDT&E laboratory; (2) use as a range for air warfare weapons and weapons systems; (3) use as a high hazard training area for aerial gunnery, rocketry, electronic warfare and countermeasures, and tactical maneuvering and air support; (4) use for geothermal leasing and development, and related power production activities; and, (5) use for other defense-related purposes.

In May 2005, pursuant to the requirements of Pub. L. 103-433 and FLPMA, NAWSCL completed and endorsed a comprehensive land use management plan for the withdrawn public lands. This land use management plan is referred to as the NAWSCL CLUMP. In addition to the military land uses granted to the DoN in Pub. L. 103-433, the 2005 CLUMP authorized the following non-military, but mission- compatible land uses, on the ranges: (1) Native American access; (2) education and research projects; (3) limited recreation; and (4) limited commercial uses, including geothermal leasing and development, and related power production activities.

The military land uses authorized by Pub. L. 103-433 and the non-military uses authorized by the 2005 CLUMP are consistent with the mission of NAWSCL, which is to conduct weapons RDT&E for weapon systems associated with air warfare, aircraft weapons integration, missiles and missile subsystems, and assigned airborne electronic warfare systems and related training within a safe, secure, and operationally diverse land range test environment. Combat relevant test and evaluation, as well as training for operational compatibility, is the primary means to ensure readiness and prepare our military to fight and win in combat. To be effective in its mission, the NAWSCL ranges must provide sufficient land and airspace to conduct test and evaluation at distances and scenarios with fidelity to combat uses. Access to a variety of conditions (e.g., simulated

threats, operational space, topographic relief, and safety constraints) and scheduling availability are important characteristics that must be preserved and enhanced. The DoN's continuing need for RDT&E and training range capability balances maximum use of the range with maintaining stewardship responsibilities for the lands and their resources.

In accordance with the Engle Act of 1958 (Pub. L. 85- 337) and FLPMA, the DoN is required to file an application with BLM requesting the Secretary of the Interior process a proposed legislative withdrawal and reservation of public land to continue military RDT&E and training activities on the NAWSCL ranges. The proposed action would continue the existing withdrawal of 1.1 million acres of public land for military use. The public land would be withdrawn from all forms of appropriation under the public land laws, including surface entry, mining, mineral leasing, and the Materials Act of 1947.

Purpose and Need: Given the primary mission of the NAWSCL land ranges, to provide a safe, secure, and highly instrumented volume of land and airspace in which to conduct controlled tests, operations and training with fidelity to combat uses, the purpose of the proposed action is to retain a military range for RDT&E and training activities for a period of 25 years. The proposed action will meet the need to support the application of current and evolving technology to solve theatre-relevant problems for the warfighter and ensure necessary training readiness, while ensuring appropriate management of land use and environmental resources; revise and implement the installation's CLUMP; and, maintain DoN readiness by accommodating current and evolving state-of-the-art RDT&E and training requirements at NAWSCL.

Alternatives: The EIS/LEIS addresses three alternatives, including the no action alternative:

1. Alternative 1 (Withdrawal with Increased Tempo) consists of: (1) Congressional renewal of the current land withdrawal of approximately 1.1 million acres of public land for continued military use; (2) revision to and implementation of the NAWSCL CLUMP to reflect current and future land uses, both military and non-military; and (3) an increase of up to 25% in the tempo of military RDT&E, training activities (including ground and air training by DoN special operations forces and other Services), and expansion of unmanned aerial and surface systems, as well as the expansion of existing and the

introduction of evolving directed energy weapons development at NAWSCL.

2. Alternative 2 (Withdrawal with Baseline Tempo) consists of: (1) renewing (through Congressional action) the land withdrawal; (2) revising and implementing the NAWSCL CLUMP; and, (3) maintaining current levels of RDT&E and training use (type, tempo, location).

3. Alternative 3 (No Action Alternative) would allow the public land withdrawal to expire, with administrative control of the withdrawn land returning to the BLM. Withdrawn lands would comprise 92% of all NAWSCL lands. Limited RDT&E and training activities at NAWSCL would continue on 8% of remaining NAWSCL fee-owned/leased land and within managed airspace.

Environmental Issues and Resources to be Examined: Environmental issues that will be addressed in the EIS/LEIS include, but are not limited to, the following: air quality; biological resources (including threatened and endangered species); cultural resources; geology and soils; hazardous materials and hazardous waste management; health and safety; noise; socioeconomics (including environmental justice); transportation; and water resources. Relevant and reasonable measures that would avoid or mitigate environmental effects will also be analyzed. Additionally, the DoN will undertake any consultations required by the Endangered Species Act, National Historic Preservation Act, Clean Water Act, and any other applicable law or regulation.

Submitting Comments: The DoN encourages interested persons to submit comments concerning the proposed extension of the public land withdrawal, the alternatives proposed for study, and environmental impacts to be analyzed. Federal, state, and local agencies, Native Americans and Federally Recognized Tribes, and interested persons are encouraged to provide oral and/or written comments to the DoN to identify specific environmental issues or topics of environmental concern that the DoN should consider. The DoN will prepare the draft LEIS incorporating issues identified by the commenting public. All comments on the EIS/LEIS, whether provided orally or in writing at the scoping meetings, or provided to the DoN during the public commenting period, will receive the same consideration during EIS/LEIS preparation.

Written comments on the scope of the EIS/LEIS should be postmarked no later than September 8, 2011. Comments may be mailed to NAWSCL Land Withdrawal EIS/LEIS Project Manager (Attn: Ms. Jo Ellen Anderson), NAVFAC Southwest, 1220 Pacific Highway, San Diego, California 92132-5178. Comments may also be submitted via the EIS/LEIS website located at http://www.ChinalakeLEIS.com.

Dated: June 3, 2011

D. J. WERNER
Lieutenant Commander,
Office of the Judge Advocate General,
U.S. Navy,
Alternate Federal Register Liaison Officer.

APPENDIX B

NAVAL AIR WARFARE CENTER WEAPONS DIVISION OPERATIONAL REQUIREMENTS DOCUMENT

Naval Air Warfare Center Weapons Division
Operational Requirements Document

April 2013

Table of Contents

Purpose 1
Background 1
Items Associated with the Proposed Action 1
1.0 Ground Activities 1
2.0 Test and Training Activities 2
3.0 Assets 3
4.0 Tempo of Operations 4
5.0 Description of Operations 7
6.0 Range Areas 18

Appendix A: Targets Used at NAWSCL
Appendix B: NAWSCL Target and Test Areas
Appendix C: RDAT&E and Training Operations at NAWSCL
Appendix D: Range Use Areas
Appendix E: Special Purpose Ranges and Facilities
Appendix F: Classes of Lasers
Appendix G: Acronyms and Abbreviations

Table of Figures

FIGURE 1: TYPICAL AIR-TO-AIR SCENARIO 8
FIGURE 2: TYPICAL SURFACE-TO-AIR SCENARIO 9
FIGURE 3: TYPICAL AIR-TO-GROUND SCENARIO 10
FIGURE 4: TYPICAL SURFACE-TO-SURFACE SCENARIO 11
FIGURE 5: EXAMPLE ENERGETICS TEST 13
FIGURE 6: TYPICAL AIR-TO-AIR HEL SCENARIO 14
FIGURE 7: TYPICAL SURFACE-TO-AIR HEL SCENARIO 14
FIGURE 8: TYPICAL AIR-TO-AIR HPM SCENARIO 15
FIGURE 9: TYPICAL AIR-TO-SURFACE HPM SCENARIO 15
FIGURE 10: TYPICAL SURFACE-TO-SURFACE HPM SCENARIO 16
FIGURE 11: TYPICAL TARGET PENETRATION SCENARIO 17
FIGURE 12: TYPICAL EJECTION SYSTEMS SCENARIO 17
FIGURE 13: NORTH RANGE USE AREAS 19
FIGURE 14: SOUTH RANGE USE AREAS 20
FIGURE 15: AIR-TO-AIR AND SURFACE-TO-AIR OPERATIONS 23
FIGURE 16: AIR-TO-GROUND OPERATIONS 24
FIGURE 17: SURFACE-TO-SURFACE OPERATIONS 25
FIGURE 18: ENERGETICS OPERATIONS 26
FIGURE 19: ELECTROMAGNETICS OPERATIONS 27
FIGURE 20: TEST TRACK OPERATIONS 28
FIGURE 21: GROUND TROOP TRAINING (TYPE I) OPERATIONS 29
FIGURE 22: GROUND TROOP TRAINING (TYPE II) OPERATIONS 30
FIGURE 23: NORTH RANGE TARGET AREAS 31
FIGURE 24: SOUTH RANGE TARGET AREAS 33
FIGURE 25: NORTH RANGE TEST AREAS 32
FIGURE 26: SOUTH RANGE TEST AREAS 34

Table of Tables

TABLE 1: OPERATIONAL BASELINE AND PROPOSED INCREASE 5
TABLE 2: CATEGORIES OF UNMANNED SYSTEMS 26
TABLE 3: ELECTRO-MAGNETIC ENVIRONMENT FOR NARROWBAND HPM 39
TABLE 4: ELECTRO-MAGNETIC ENVIRONMENT FOR WIDEBAND HPM 39

Purpose

The Naval Air Warfare Center Weapons Division (NAWCWD) is the primary user of the Naval Air Weapons Station China Lake (NAWSCL) ranges for conducting military operations. This document contains the NAWCWD operational requirements to be incorporated into the Environmental Impact Statement/Legislative Environmental Impact Statement (EIS/LEIS) to ensure the continued ability to accomplish its mission. It will be reviewed annually by the Naval Air Systems Command (NAVAIR) Ranges Sustainability Office and updated as needed.

The NAWCWD mission is to execute full-spectrum weapons and warfare systems Research, Development, Acquisition, Test and Evaluation

Background

The Navy's legislative land withdrawal of approximately 1.1 million acres at NAWSCL from the Bureau of Land Management (BLM) will expire on 31 October 2014. The BLM, in partnership with the Navy, is therefore requesting Congress to renew the land withdrawal to retain NAWSCL as a military range for research, development, acquisition, test and evaluation (RDAT&E) and training activities for a period of 25 years.

To address the continued withdrawal and comply with the National Environmental Policy Act (NEPA), the Navy is preparing an EIS/LEIS. The Proposed Action of the EIS/LEIS includes (1) Congressional renewal of the land withdrawal; (2) revision and implementation of the installation's Comprehensive Land Use Management Plan; and (3) accommodation of an increase (up to 25 percent) in RDAT&E and training activities, expansion of unmanned aerial and surface systems, and expansion of existing and introduction of evolving directed energy (DE) weapons development. The Proposed Action meets the need to support the application of current and evolving technology to solve theater-relevant problems for the warfighter and ensure necessary training readiness, while ensuring appropriate management of land use and environmental resources.

Items Associated with the Proposed Action

The following six sections provide information related to the Proposed Action.

1.0 Ground Activities

Responding to warfighter needs is fundamental to the NAWCWD mission. NAWCWD must maintain the ability to conduct a broad range of air and surface test and training operations and activities that support warfighter requirements and provide the decision-quality data required

for the acquisition of weapons systems. To be responsive to theater-relevant requirements and complete tests or training events in a reasonable timeframe, NAWCWD must have the flexibility to conduct the following activities:

- *Pre-event/set-up activities* – involves the installation/placement of portable/stationary instrumentation or equipment for event monitoring and data acquisition near target and test sites and at other remote locations; also entails shallow trenching to cover cables and instrumentation and burying certain targets/test items up to three meters to simulate theater conditions
- *Target-related activities* – includes target construction, placement/installation, maintenance, recovery, removal, clean up (including remediation of any released hazardous substances), and disposal
- *Launch activities* – involves the air or ground launch of a test article or target
- *Post-event/teardown activities* – involves test article recovery, debris mapping, instrumentation/equipment teardown, removal of buried targets/test items and instrumentation, and clean up of the target/test site, including remediation of any released hazardous substances
- *Off-road activities* –
    - Use of vehicles or mechanical equipment in support of any above mentioned activity
    - Operation of mobile targets to simulate theater-relevant threats
    - Operation/access of personnel, vehicles, and unmanned systems to unique terrain, such as mines, caves, tunnels, sloped areas, vegetative areas, etc., to satisfy unique test/training requirements
    - Removal of used targets, recovery of crashed vehicles, and remediation of any released hazardous substances

All related support equipment and instrumentation will be confined to roads, road shoulders, instrumentation pads, and kineto tracking mount (KTM) locations. Equipment will be transported to and from these areas on existing access roads, although off-road travel may be required occasionally. Hand placement of items in undisturbed areas will also occur.

2.0 Test and Training Activities

RDAT&E and training operations conducted at NAWSCL and associated with the Proposed Action fall within the following broad operational categories:

- Air-to-Air
- Surface-to-Air
- Air-to-Ground
- Surface-to-Surface
- Energetics/Ordnance
- Electromagnetics

- Test Track

Additional Fleet training operations include air combat, aircrew, combat skills, and ground troop training (GTT). These operations are further discussed in Sections 5.0 and 6.0, respectively.

3.0 Assets

The following assets are typically used to support the RDAT&E and training activities described above:

Aircraft

Aircraft participants may include the full spectrum of manned and unmanned and fixed and rotary winged aircraft platforms. Aircraft may operate singly or in combination in any particular event.

Surface Vehicles

A broad range of surface vehicles may be used to support RDAT&E and training operations as well as range, facility, and road maintenance activities. Examples include, but are not limited to, pickup trucks and all terrain vehicles (ATVs); tactical vehicles such as high mobility multipurpose wheeled vehicles (HMMWVs) and mine resistant ambush protected (MRAP) vehicles; construction-related vehicles such as bulldozers, road graders, and heavy equipment; and unmanned ground systems (UGS) that are both wheeled and tracked.

RDAT&E events require surface vehicles for instrumentation/support equipment set-up and teardown, target construction and placement, test article and/or target recovery, and target and test clean up. GTT operations involve surface vehicles to support training requirements.

All vehicle use (wheeled and tracked) will be conducted in accordance with the *Ranges Department China Lake Ranges Road Usage Direction* (May 2010). Projects with off-road requirements will be reviewed and appropriate environmental documentation prepared as needed.

Targets

A variety of targets may be used throughout NAWSCL to test the impacts of full-scale systems and subsystems driven by emerging theater requirements. These targets are essential to testing and ensuring the accuracy and effectiveness of the weapon systems, ordnance, sensors, and other military equipment being developed to support our warfighters.

Targets may be involved in both static and dynamic operations and will be engaged from both the air and ground. They must often be constructed according to specific customer requirements and are designed to replicate theater-relevant threats. Some targets may be enhanced with radio frequency (RF), infrared (IR), or other electromagnetic and visual features to further increase the realism of such threats. While some targets will be consumable (i.e.,

destroyed), others will be fabricated or selected to be intentionally missed. Target hit/kill or near-miss rates will be dependent upon test objectives.

Ground disturbing activities associated with targets include construction and set-up, recovery (if intact), and clean up (if destroyed). Target clean up involves removal and disposal, which typically requires the use of mechanical equipment. Targets will be used in existing target and test areas to the extent feasible, based on specific test or training requirements. Descriptions of the types of targets used at NAWSCL are provided in Appendix A.

Payloads and Expendables

A broad variety of payloads and expendables may be intentionally released during open-air RDAT&E and training operations. Examples include, but are not limited to, missiles, bombs, rockets, gun ammunition, fuel-air explosives, explosive charges, fuels, countermeasures (e.g., flares, chaff, smokes, decoys, and experimental shapes), common household or janitorial products (proxies), chemical releases associated with some DE systems, and similar items required to support test or training events.

Ordnance is generally classified as live or inert. Live ordnance typically contains a high-explosive (HE) warhead. Inert ordnance does not have a live warhead, but may contain a fuse sensor, spotting charge, or other energetic materials that may pose a safety hazard. In general, all target and test areas are authorized for the use of inert ordnance; however, HE use is limited to specific areas. In addition, explosives use is limited by established net explosive weight (NEW) limits. Appendix B denotes authorized HE use and NEW limits (as applicable) for each NAWSCL target and test area.

4.0 Tempo of Operations

An operational baseline was developed to capture the activities associated with RDAT&E and training operations currently conducted at NAWSCL. However, it is important to note that these activities vary depending on customer and program requirements and world events.

Baseline information was derived from a variety of sources, including the NAVAIR Range Complex Management Plan (RCMP), NAWCWD subject matter expert (SME) knowledge, and the 2004 Final Environmental Impact Statement (FEIS). RCMP data for fiscal years 2007 and 2008 were normalized to reflect a single baseline year. Table 1 provides the operational baseline as well as the proposed 25 percent increases for all operational parameter categories except those shaded in light blue. Numbers in these categories are real numbers based on NAWCWD SME projections for meeting future mission requirements.

Table 1: Operational Baseline and Proposed Increase

Operational Parameter	Operational Baseline	Proposed Increase
AIR OPERATIONS		
Aircraft Flight Hours	5,750	25% increase to 7,188
Aircraft Flights (Sorties)*		25% increase to
North Range	3,835	4,794
Echo Range	2,839	3,549
Superior Valley	3,155	3,944
TOTAL	9,829	12,287
GROUND OPERATIONS		
Energetics/Ordnance Tests		25% increase to
Insensitive Munitions	175	219
Propulsion	45	56
Air Breathing Engine/Material Evaluation	35	44
Warhead	141	176
Weapons Survivability Laboratory (Test Series)	30	38
*Explosive Ordnance Disposal (EOD) Land Demolitions***	155	194
TOTAL	581	727
Counter-Improvised Explosive Device (CIED) Tests (Test Events)	1,675	25% increase to 2,094
EOD Training – Darwin Wash (Classes)	30	25% increase to 38
Ground Troop Training Operations (Training Events)***		
Small Group, With or Without Vehicles (Type I)	As Needed	As Needed
Large Group, With Vehicles (Type II)	42	53
Test Track Operations (Test Events)		
Main Track	15	30
G-4	3	7
TOTAL	18	37
UNMANNED SYSTEMS OPERATIONS		
Unmanned Aerial Systems (UAS) Flights (Flight Hours)		
Group 1 (0-20 lbs.)	16	156
Group 2 (21-55 lbs.)	42	1,600
Group 3 (<1,320 lbs.)	29	3,000
Groups 4 & 5 (>1,320 lbs.)	1,500	4,000
TOTAL	1,587	8,756
UGS Operations (Test Hours)		
Group 1 (0-5,000 lbs.)	364	1,144
Group 2 (5,001-15,000 lbs.)	234	728
Group 3 (>15,000 lbs.)	96	312
TOTAL	694	2,184
DIRECTED ENERGY OPERATIONS		
High-Energy Laser (HEL) Weapon Activity (Test Days)	50	115
High-Power Microwave (HPM) Weapon Activity (Test Days)	50	115
MOBILE TARGETS		
Aerial Targets	25	35
Vehicular Land Targets	361	25% increase to 451

Operational Parameter	Operational Baseline	Proposed Increase
ORDNANCE EXPENDITURES		
Bombs		25% increase to
North Range	411	514
Echo Range	653	816
Superior Valley	10,464	13,080
TOTAL	11,528	14,410
Gun Munitions		25% increase to
North Range	18,683	23,354
Echo Range	4,224	5,280
Superior Valley	74,980	93,725
TOTAL	97,887	122,359
Darwin Wash (EOD)	2,634,240	3,292,800
Rockets		25% increase to
North Range	366	458
Superior Valley	342	428
TOTAL	708	886
Other (Flares, Chaff, etc.)		25% increase to
North Range	2,280	2,850
Echo Range	74	93
Superior Valley	124	155
TOTAL	2,478	3,098
Missiles		25% increase to
North Range Only	109	136
ENERGETIC MATERIAL EXPENDITURES		
Explosives		25% increase to
North Range		
C-4 (lbs.)	1,095	1,369
Data Sheet .125	280	350
Detonation Cord (feet)	12,094	15,118
Dynamite	112	140
Exrod	56	70
Gun Powder (lbs.)	4,889	6,151
High Explosives (lbs. net explosive weight [NEW])	22,313	27,891
Satchel Charge C-4	84	105
Smoke Grenade	112	140
Squibs/Initiators (lbs.)	318	402
TNT (lbs.)	33,112	41,390
Propellants (lbs. NEW)		
North Range	631,249	789,061

* Aircraft flight sorties include manned aircraft involved in RDAT&E and training operations, as well as other flights such as aircrew proficiency, cross-country, logistics, and functional check flights. It does not include unmanned aerial system (UAS) flights.

** Explosive ordnance disposal (EOD) land demolition baseline numbers include 11 at Burro Canyon and 144 at B-Mountain.

*** Includes Explosive Ordnance Disposal Training & Evaluation Unit One (EODTEU-1) training conducted outside of Darwin Wash.

5.0 Description of Operations

NAWCWD operations can be classified as one of three categories: Research and Development (R&D), Test and Evaluation (T&E), or training. NAWCWD must maintain the ability to conduct current and evolving RDAT&E and training operations at NAWSCL.

Research & Development

R&D supports all phases of weapon systems development, from the earliest concepts of a weapon, to engineering and manufacturing, to Fleet use, and finally to the disposal of systems no longer needed by the military. The goal of weapons R&D is to explore the use of promising technology to solve emerging warfighter needs. At NAWSCL, research activities focus on the areas of weapons guidance and control, warheads, explosives, propellants, pyrotechnics, propulsion systems, airframes, and the basic chemistry and physics that support these areas.

Test & Evaluation

T&E is a continuous process throughout the weapon systems life cycle. Weapon systems and components are tested and evaluated under natural operating conditions at NAWSCL to replicate realistic employment and operational scenarios to the maximum extent practicable. General categories of T&E operations include, but are not limited to, air and surface launched weapons, communications, DE, electromagnetics, electronic warfare and countermeasures, ordnance T&E, sensor, weapons survivability, and track tests.

Training

Training operations are accommodated on a non-interference basis with the primary RDAT&E mission. The varied terrain and environmental conditions throughout NAWSCL support training in air-to-air and air-to-surface combat skills as well as other types of air and ground training exercises. Training operations enable warfighters to rehearse in realistic environments against theater-relevant threats and static/moving targets or, “to train as they fight.” General categories of training operations include, but are not limited to, air combat, aircrew, combat skills, and GTT.

The major operational categories encompassing RDAT&E and training activities at NAWSCL are described below. A definition of GTT types and the frequency at which they occur is also provided. Appendix C provides a more complete listing of operations within each of these categories.

Air-to-Air Operations

A typical air-to-air scenario, depicted in Figure 1, involves the test of an air-launched, air-intercept weapon against a variety of aerial targets. Air-to-air operations generally employ manned and/or unmanned aircraft, a kinetic or DE weapon system, a target, and countermeasure devices such as flares or chaff. Air-to-air testing assesses and evaluates weapons and weapon systems and the integration of weapon systems with the aircraft. Operations may include captive-carry inert, live motor but no warhead, or tactical all-up round for firing and warhead detonation. Examples of this scenario are the launch of an AIM-9X Sidewinder missile against a full-scale aerial target or the deployment of a high-energy laser (HEL) weapon from a manned platform against an unmanned aerial target.

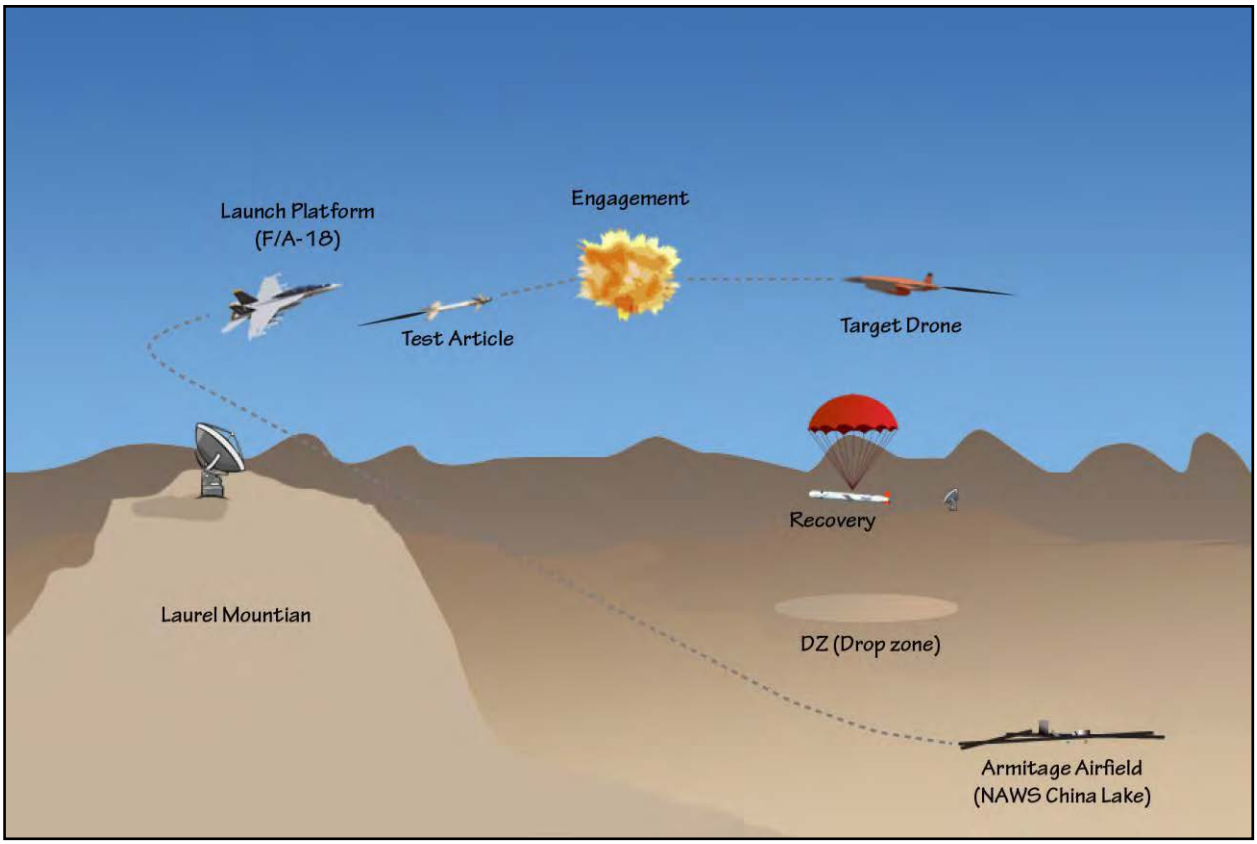


Figure 1: Typical Air-to-Air Scenario

Surface-to-Air Operations

A typical surface-to-air scenario, depicted in Figure 2, has the same hazard patterns as air-to-air operations. This scenario involves the test of a surface launched kinetic or DE weapon against a variety of aerial targets. Testing may also include the use of countermeasure devices such as flares and chaff. Surface-to-air testing evaluates overall weapon system performance, warhead effectiveness, and software/hardware modifications or upgrades of ground-based weapons systems. Operations may include inert warheads or tactical all-up rounds for firing and warhead detonation. Targets used in surface-to-air testing include full-scale surface launched targets, air- or surface-launched subscale targets, unmanned systems, or helicopter targets. This scenario includes the test of a ground-launch weapon from a fixed launcher. Examples of this scenario are the launch of a 2.75" HYDRA-70 rocket from a stationary launch rail, a phalanx gun systems test, or the deployment of a HEL weapon against an airborne target.

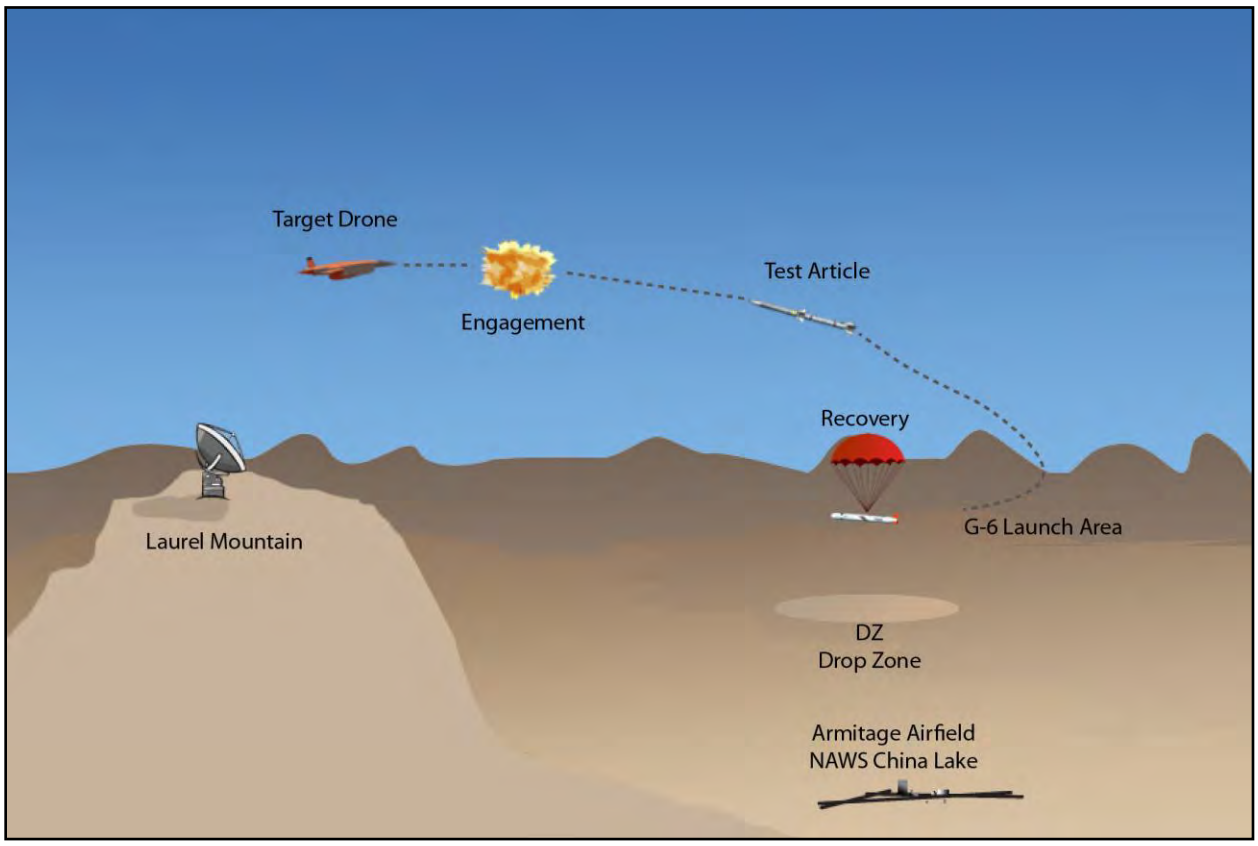


Figure 2: Typical Surface-to-Air Scenario

Air-to-Ground Operations

A typical air-to-ground scenario, depicted in Figure 3, involves the test of an air-launched, ground attack, kinetic or DE weapon against a variety of ground-based targets. Air-to-ground testing assesses and evaluates weapon systems, the integration of air-to-ground weapons or weapon systems to the aircraft, warhead effectiveness, and weapon systems and/or aircraft software and hardware modifications or upgrades. Air-to-ground tests are heavily dependent on ground targets, which can include a wide variety of both vehicular and structural targets. Operations may include captive-carry inert, live motor but no warhead, or tactical all-up round for firing and warhead detonation. Examples of this scenario are the launch of a GBU-130 Joint Direct Attack Munition (JDAM) against a fixed, structural target or the deployment of a high-power microwave (HPM) weapon against an electronic target.

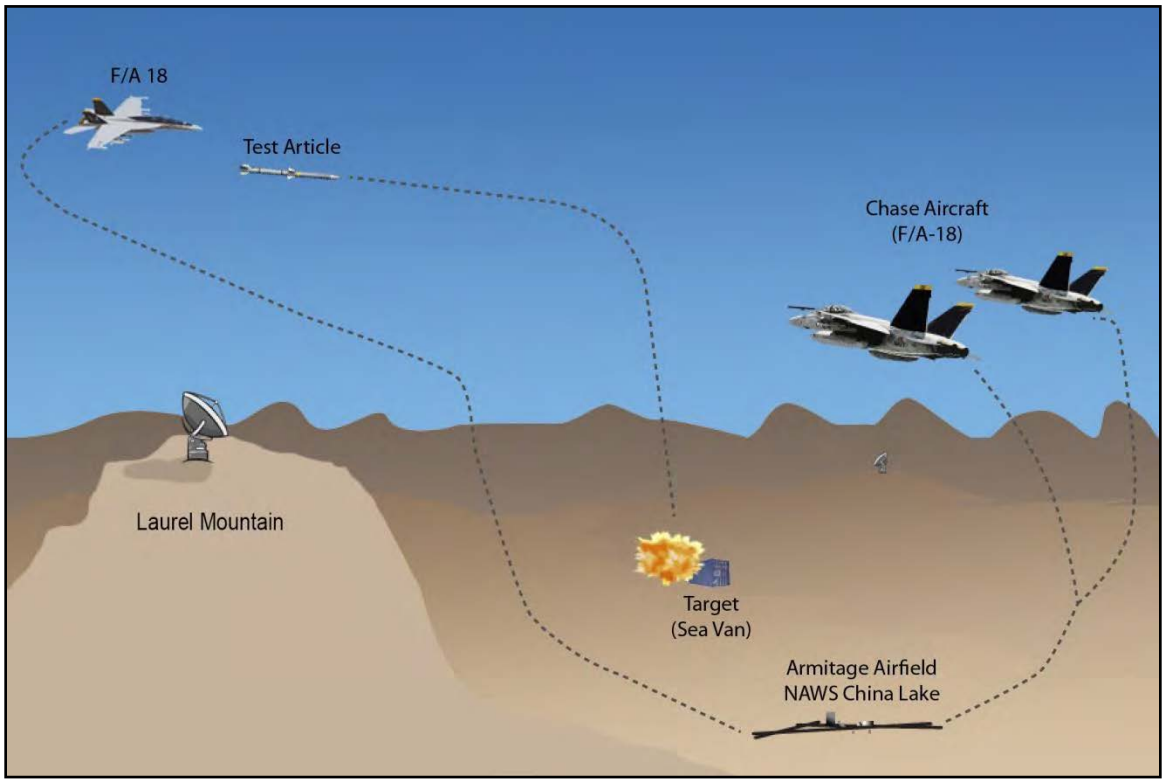


Figure 3: Typical Air-to-Ground Scenario

Surface-to-Surface Operations

A typical surface-to-surface scenario, depicted in Figure 4, involves the test of a surface-launched, kinetic, or DE weapon against a surface target. Surface-to-surface testing evaluates the overall weapon system performance, warhead effectiveness, and software/hardware modifications or upgrades of ground-based weapons systems. Operations may include inert warheads or tactical all-up rounds for firing and warhead detonation. Targets used in surface-to-surface testing include both fixed and mobile. This scenario includes the testing of naval guns and other types of smaller caliber guns from fixed surface sites, ground vehicles, and air platforms. Examples of this scenario are the 5"/54 naval guns, ground-based DE systems, and shoulder fired weapons.

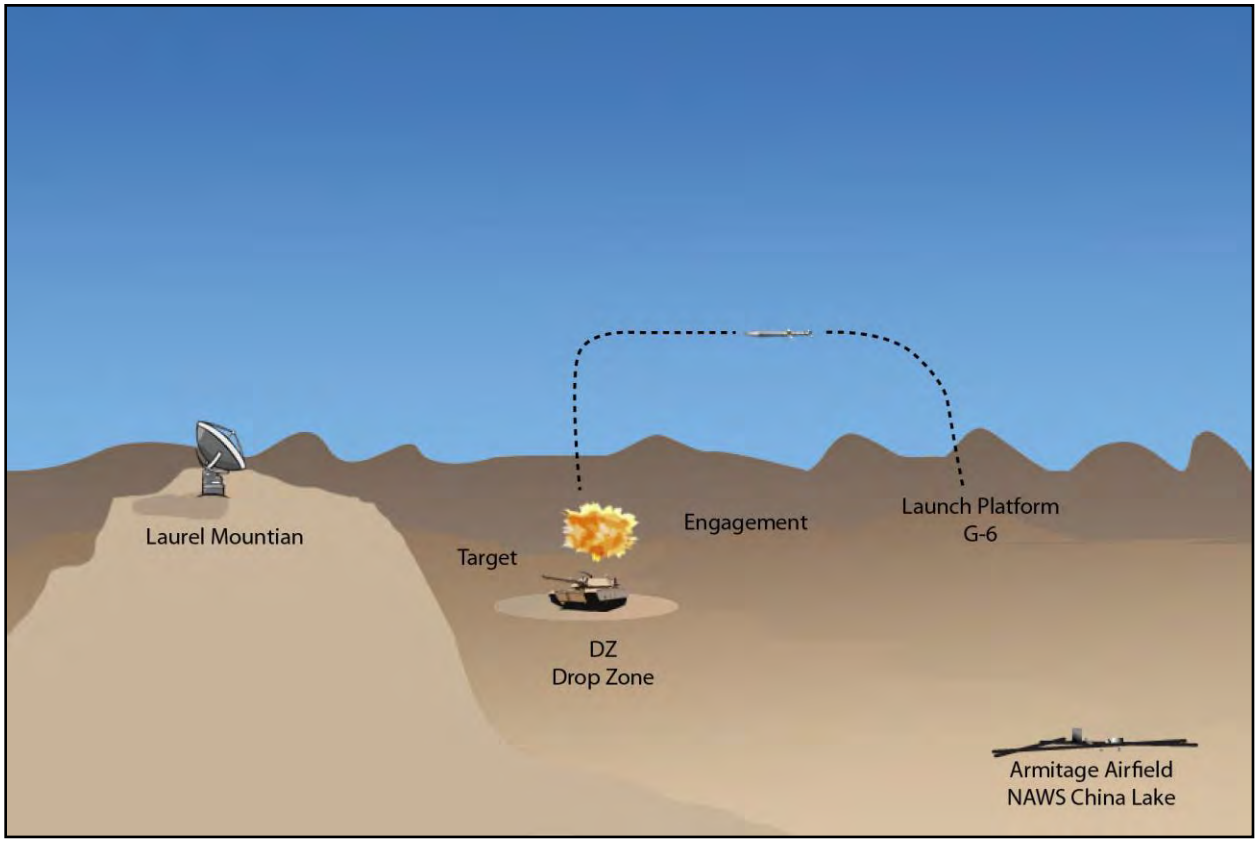


Figure 4: Typical Surface-to-Surface Scenario

Energetics/Ordnance Operations

An energetics/ordnance scenario includes test, training, and disposal activities related to the use of energetic materials such as propellants and explosives. Much of the work conducted by the Energetics Research Division on explosives, propellants, and pyrotechnics is included in this category. In addition, the development and test of counter-improvised explosive device (CIED) detection and neutralization systems may be considered energetics testing. Examples include:

- Propulsion testing of solid fuel rocket motors ranging from small laboratory scale to large strategic systems up to 1.5 million pounds of thrust, aero-heating testing of materials and small ram jet engines, and characterization of combustion products and plume measurements of rocket motors.
- Environmental and safety testing for all-up rounds in accordance with Military Standard (MIL-STD)-810G, *Environmental Test Methods and Engineering Guidelines*, or MIL-STD-2105D, *Department of Defense Test Method Standard: Hazard Assessment Tests for Non-Nuclear Munitions,* requirements. Environmental life cycle tests include vibration, temperature, humidity, x-ray, and final live munitions firing. Safety tests include fast and slow cook-off, bullet and fragment impact, drop tower, and sympathetic detonation. Test articles are generally all-up rounds undergoing either insensitive munitions testing to ensure safe deployment at sea, or qualification series testing to simulate the weapons life cycle and qualify it for operational deployment. All weapon systems are required to undergo this type of testing.
- Treatment of energetic hazardous waste generated from R&D laboratory activities, as well as munitions waste (both nonstandard items that are no longer useful to RDAT&E purposes and standard items that are expired, in excess, or unsafe). Operations are performed at a permitted facility in Burro Canyon. The facility allows for the treatment of sizeable quantities of energetic wastes that cannot be safely transported off range and must be treated on-site.
- Manned/unmanned systems testing against buried threats.
- Blow in place (BIP) activities to dispose of unexploded ordnance or support range operations.
- Warhead testing conducted in special ground facilities to measure the effectiveness of operational and development weapons, fuel-air testing, gun testing, and a large variety of specialized R&D activities. Test scenarios range from small explosive tests to large arena tests to characterize fragment distribution and velocity, shock and pressure waves, shaped charge performance, and overall warhead effectiveness.

Figure 5 illustrates an example energetics test.

Figure 5: Example Energetics Test

Electromagnetics Operations

An electromagnetics scenario involves ground and flight tests that radiate radio frequency (RF) energy across much of the electromagnetic spectrum. These operations do not typically include the release of kinetic weapons such as missiles, rockets, bombs, and guns. However, they may involve the release of electronic warfare (EW) defensive countermeasure devices such as chaff, flares, and decoys. Electromagnetic (EM) operations include antenna pattern and radar cross-section (RCS) measurements; defensive and offensive EW systems; laser systems for targeting, weapons, communication, mapping, etc.; DE weapons; experimental electromagnetics; communications; EM vulnerability of electronic systems; and other RF-related testing. This category may also include the development and test of CIED detection and neutralization systems.

DE weapons development and test are an important component of electromagnetics. HEL and HPM open-air test events may include:

- Component level test to evaluate functionality and efficiency
- Beam characterization to measure fluence, attenuation, divergence, and other propagation effects under various atmospheric conditions
- Subscale systems to evaluate component compatibility
- System integration into air and surface platforms
- Test to evaluate laser and HPM beam interaction with targets
- Full-up system test to evaluate acquisition and tracking performance
- Full-up system test to defeat air and/or ground targets with DE weapons mounted in air and/or ground vehicles

Figures 6 through 10 depict typical HEL and HPM scenarios at NAWSCL.

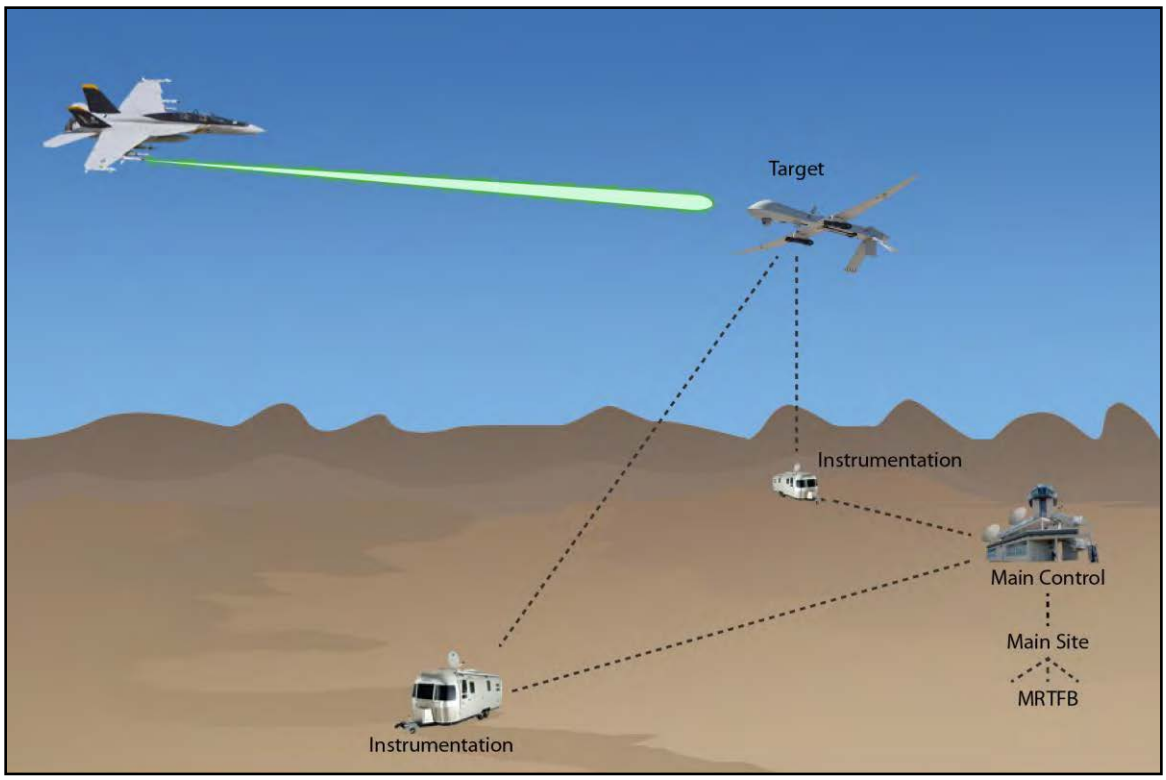


Figure 6: Typical Air-to-Air HEL Scenario

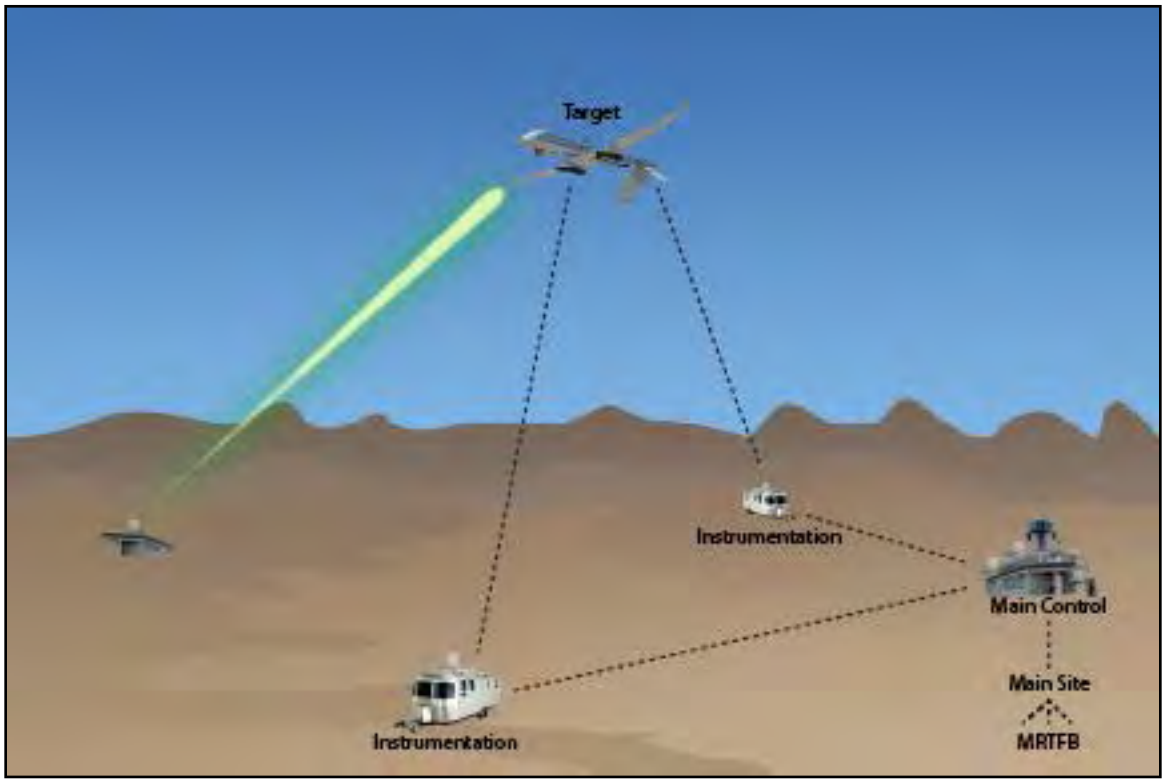


Figure 7: Typical Surface-to-Air HEL Scenario

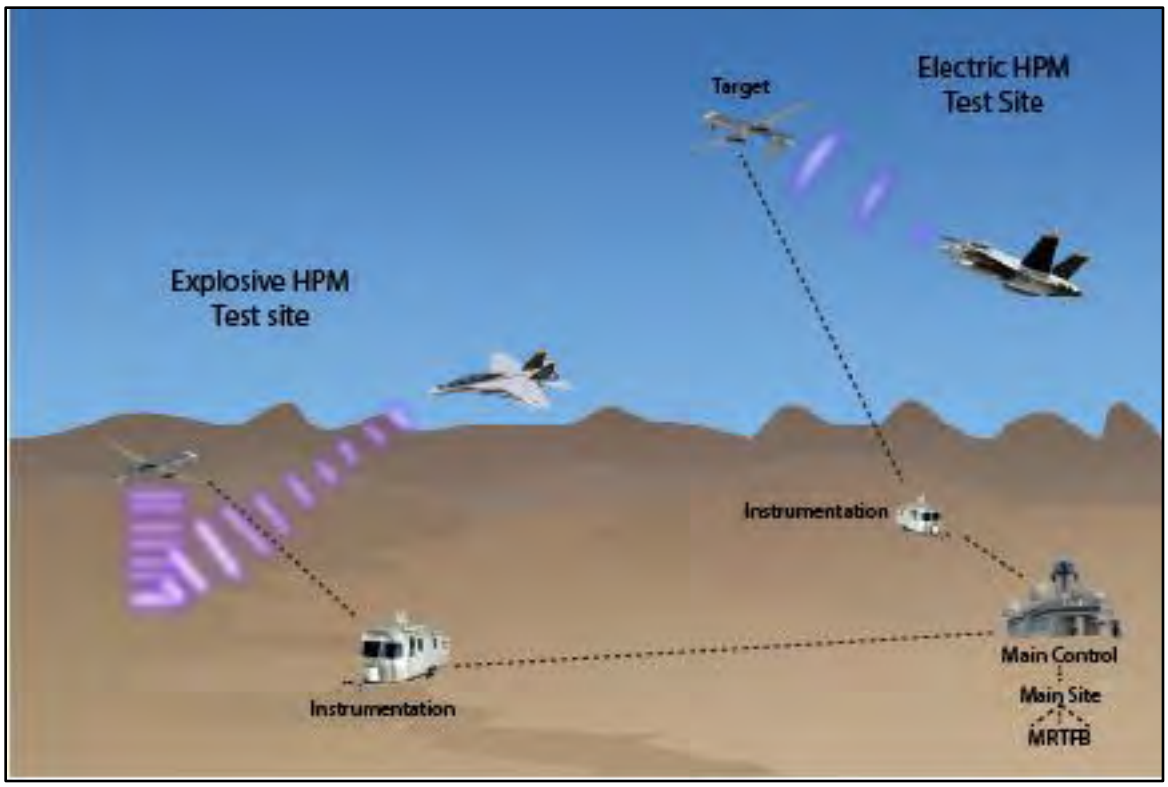


Figure 8: Typical Air-to-Air HPM Scenario

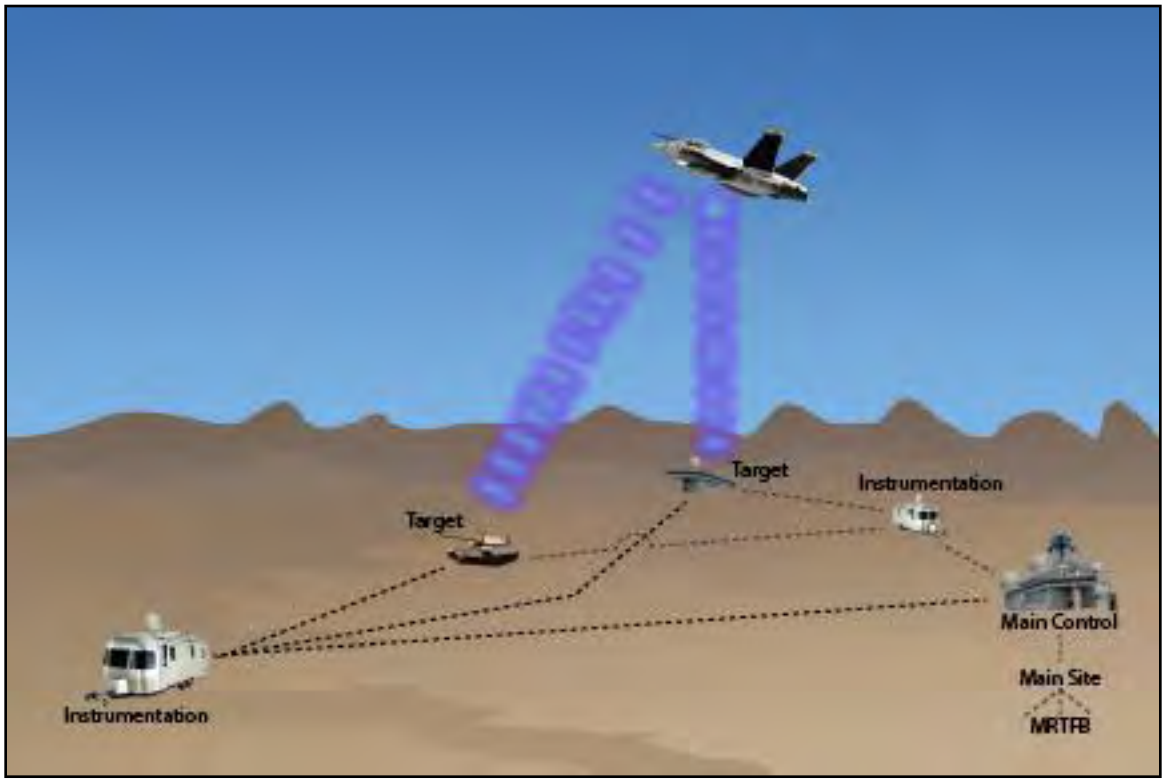


Figure 9: Typical Air-to-Surface HPM Scenario

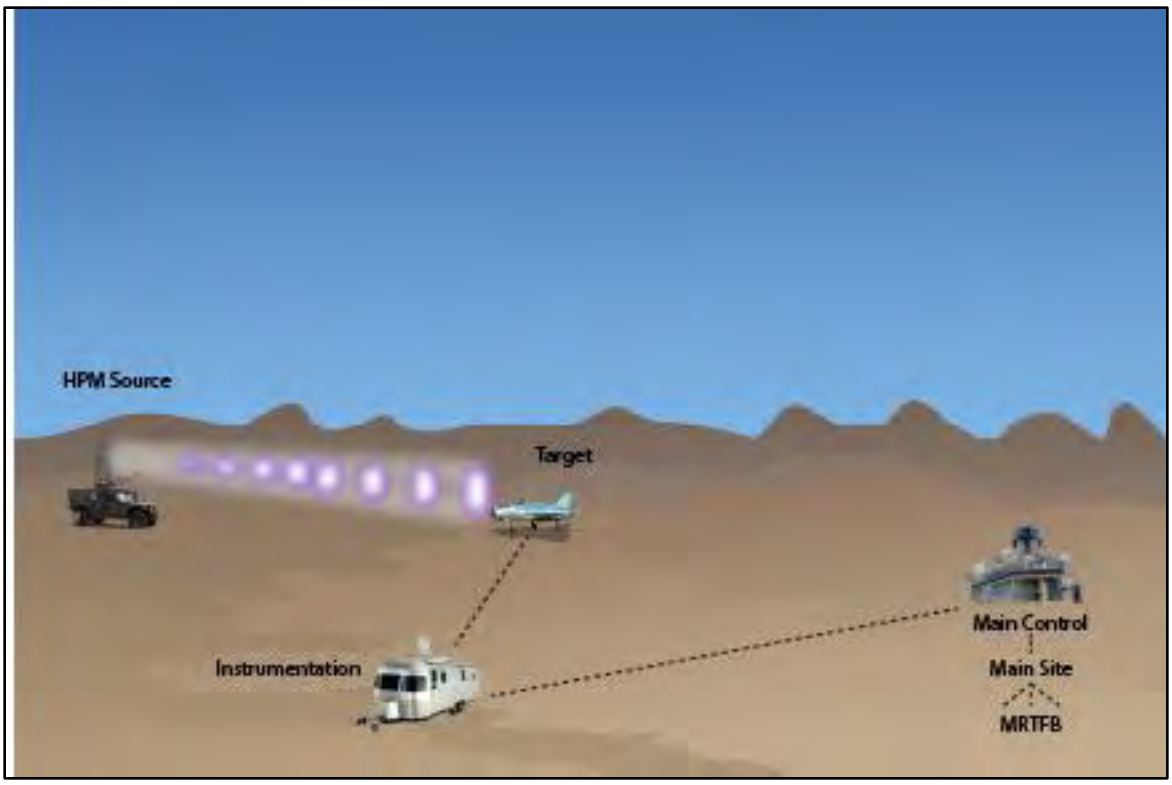


Figure 10: Typical Surface-to-Surface HPM Scenario

Test Track Operations

This scenario involves the test of a kinetic or DE weapon system mounted on a sled capable of operating at speeds ranging from subsonic to hypersonic. A test article, often a full-scale aircraft or weapon system, is propelled down the track to simulate flight conditions. Typical test track operations include target penetration using live HE warheads, live fuses, aircrew ejection systems, bombs, missiles, rockets, free flight terminal ballistics, environmental, soft recovery, EW and countermeasures, and vehicle and barrier testing. An example of this scenario is the test of a weapon system for target penetration capabilities against a fixed target, often a concrete block, mounted down-range of the muzzle section of the track. The weapon is separated from a propelled sled, which is retarded via water brake prior to the muzzle, and allowed to transit down-range to impact. Figures 11 and 12 illustrate test track event scenarios.

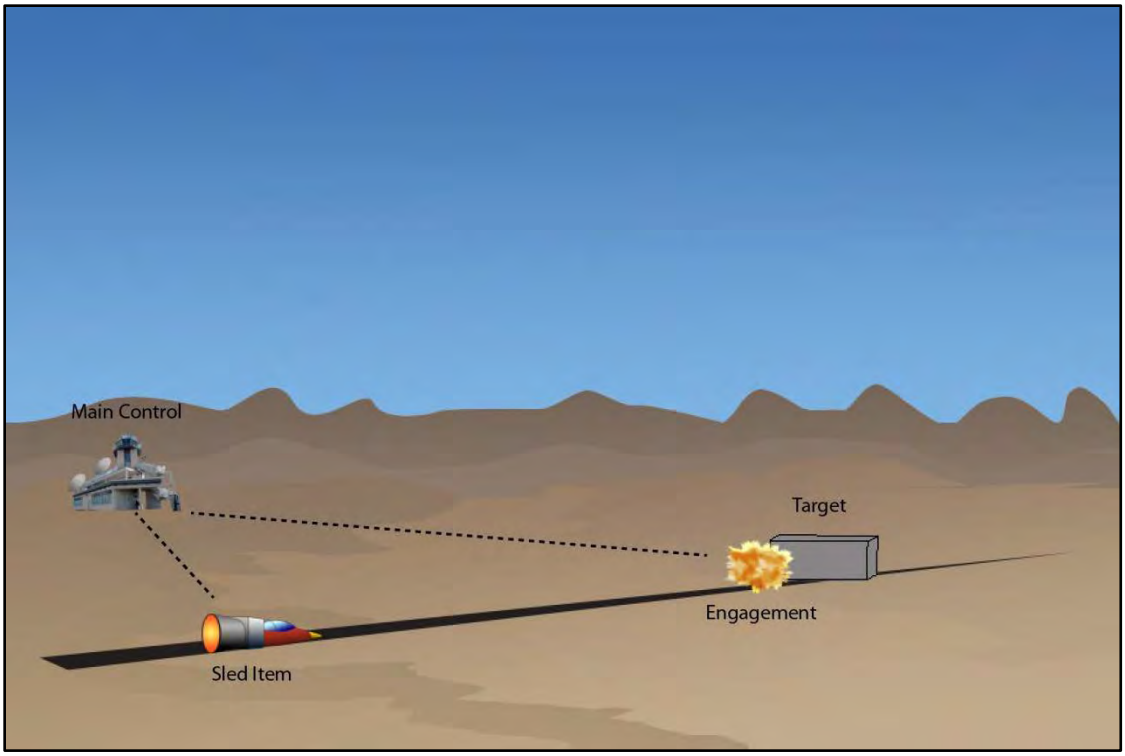


Figure 11: Typical Target Penetration Scenario

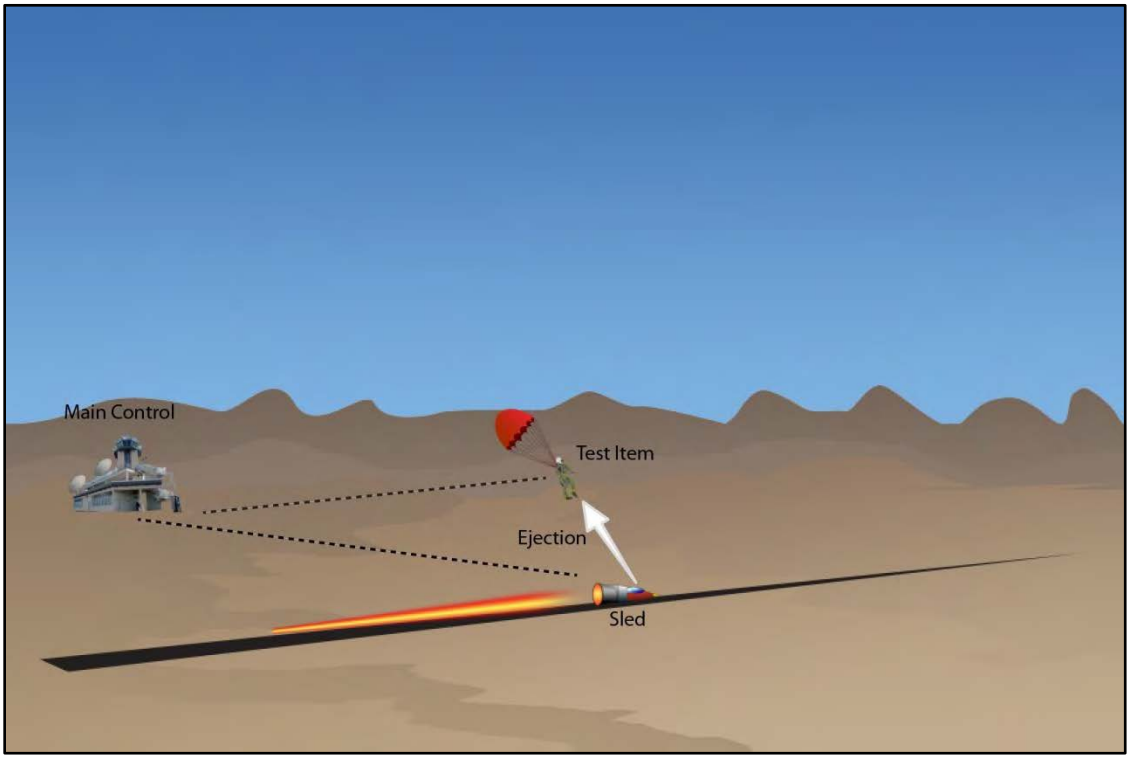


Figure 12: Typical Ejection Systems Scenario

Ground Troop Training

GTT at NAWSCL involves small-scale, theater-relevant combat training of ground troops. Training is based on customer requirements and can be accomplished as part of a larger test activity or as a discrete training event. Examples include force reconnaissance, insertion and extraction, close air support, fleet area control and surveillance, and other types of tactical exercises. Activities conducted by EODTEU-1 and the Seabees outside of their normal operating areas would also be captured in this category.

Ground troops may be on foot, with or without military support animals (i.e., horses, mules, or military working dogs) and may involve multiple support vehicle types. GTT operations may also involve support aircraft (manned or unmanned; fixed or rotary wing) and access to distinct terrain such as mines, caves, tunnels, sloped areas, or vegetated areas to satisfy unique training requirements.

Small group test or training activities (no more than eight individuals), known as GTT Type I, may be conducted on any area of the North and South Ranges with or without support animals (dogs, horses, mules, etc.). These activities do not include the use of any form of wheeled vehicle. Small group overland training activity routes and directions shall be intentionally varied by no less than ten foot intervals to eliminate the possibility of the formation or making of trails by these activities. Development of fighting positions, observation points, use of explosive devices, or periods of concentrated activity will not be permitted outside existing travel surfaces (e.g., roads, turnouts, or parking lots), or highly developed and disturbed portions of target sites, test sites, and instrumentation sites. These operations will not include any new surface disturbing activities.

GTT involving larger groups (not to exceed 40 troops) or using support vehicles, known as GTT Type II, may only occur in areas where ground disturbance would not be increased such as existing travel surfaces (e.g., roads, turnouts, or parking lots), target areas, test sites, and instrumentation sites. These training activities may expand by up to 25 percent. Small group training with support vehicles may occur on an as-needed basis.

6.0 Range Areas

At the largest scale, NAWSCL is divided into the North and South Ranges. These land ranges are further divided into multiple areas according to historic range use (Figures 13 and 14). Brief descriptions of the North and South Range Use Areas are provided in Appendix D.

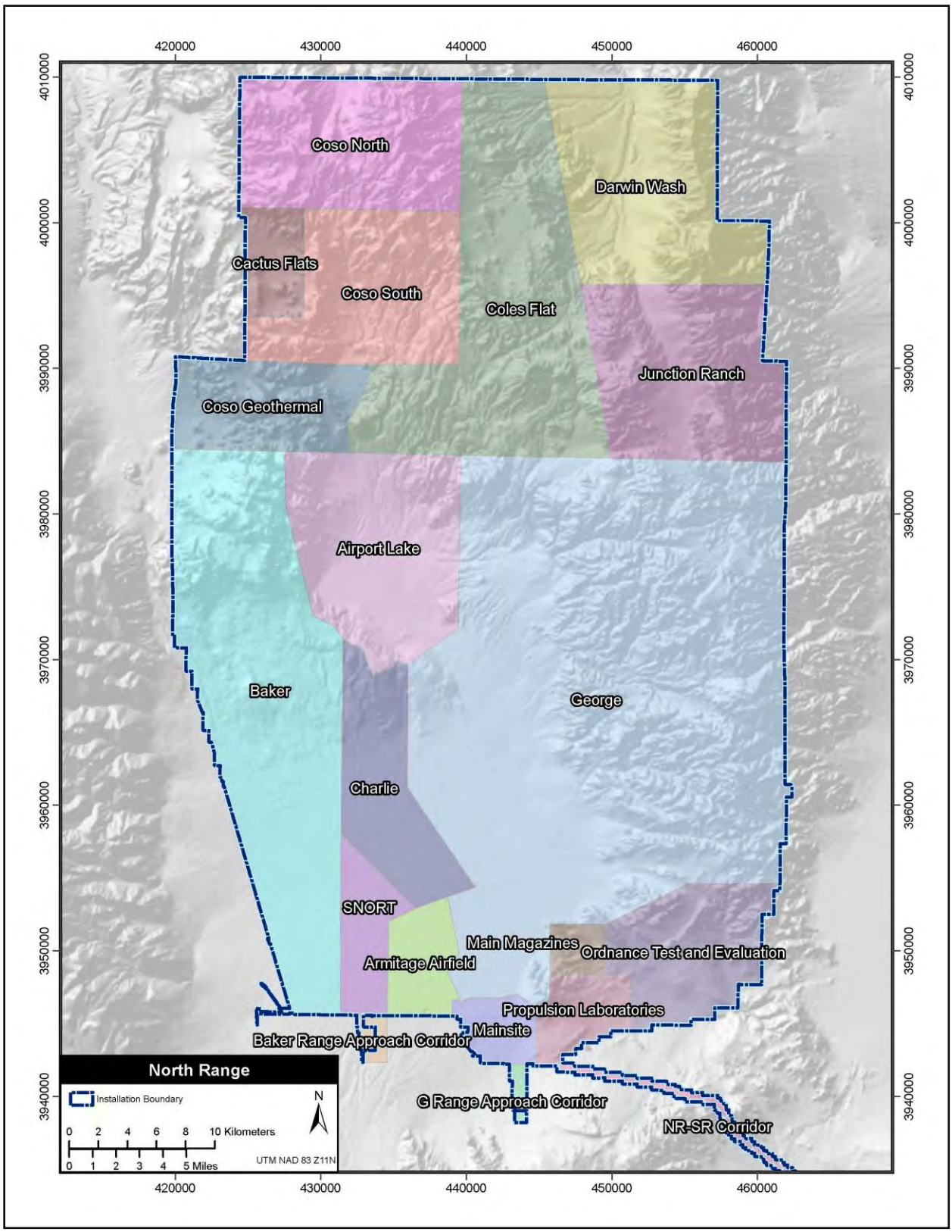


Figure 13: North Range Use Areas

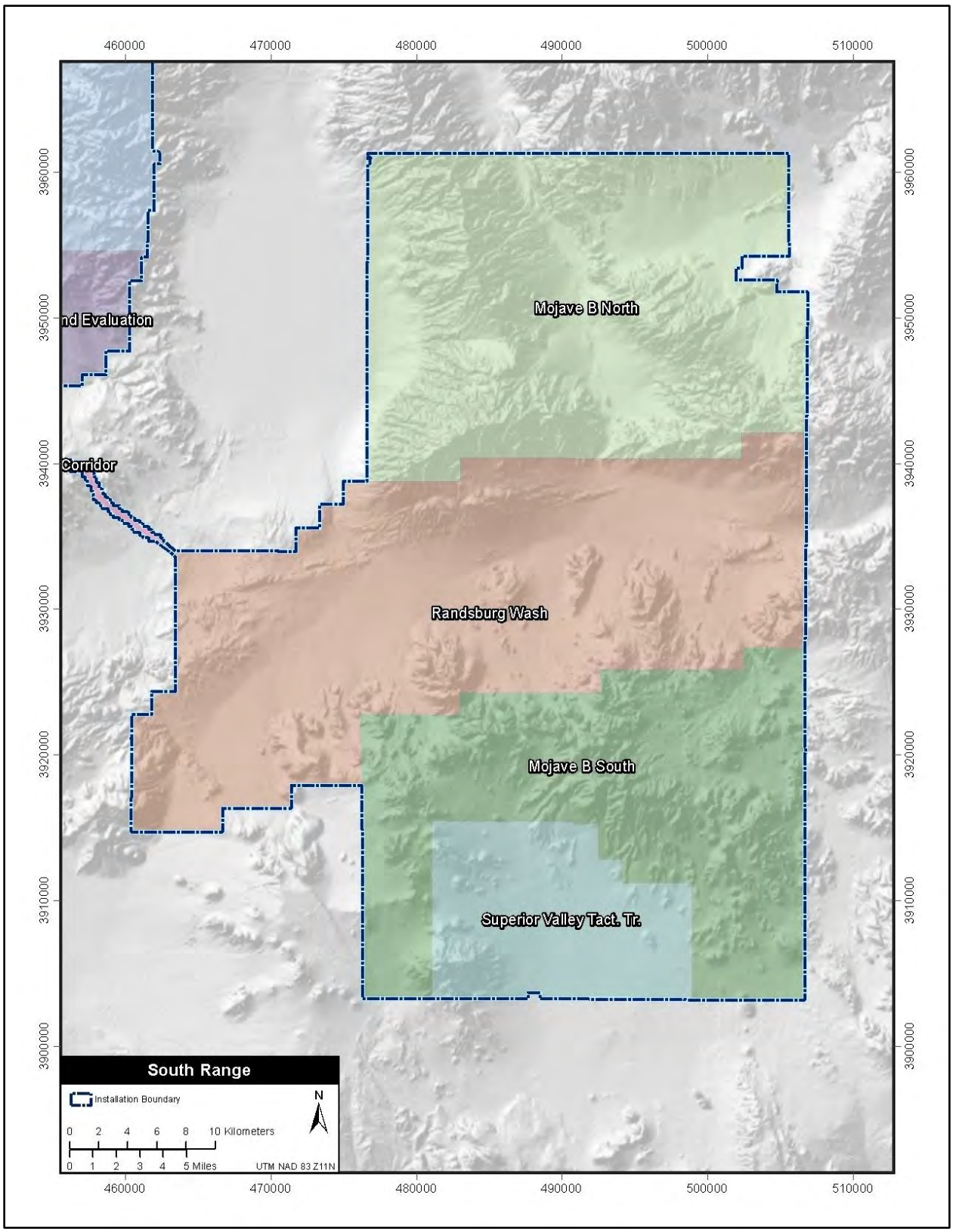


Figure 14: South Range Use Areas

Range Use Areas allow the scheduling of concurrent operations, thereby optimizing range utilization and maximizing the ability to satisfy customer requirements. Range Use Areas are used singularly or in combination to meet specific test or training requirements. For instance, operations not involving the release of ordnance or other expendables and with no associated ground disturbance activity may be conducted throughout NAWSCL, although certain areas may be preferable due to terrain or the availability of ground test support facilities. Examples include flight operations (manned and unmanned, fixed and rotary wing) and various electromagnetic tests.

Operations with large hazard patterns, such as air-to-air, surface-to-air, air-to-ground, and surface-to-surface tests, may involve multiple Range Use Areas, an entire Range (e.g., North Range), or even cross-range scenarios (e.g., across the North and South Ranges or across NAWSCL and Sea Range). Although these tests are highly scripted and controlled, due to their dynamic nature, all range areas within the hazard pattern are subject to intermittent test impacts. These associated impacts may result from unexpected or poor test article performance, missing target centers, ordnance skips, fragment-throw patterns, and/or test item recovery activities. NAWCWD performs due diligence to calculate the landing areas for test articles and associated debris as precisely as possible.

NAWCWD has determined and identified the specific engagement areas, debris areas, target and test areas, and/or focused EM areas, as applicable, that are required to support each of the major categories of operations described in Section 5.0. These are illustrated in Figures 15 through 20. Identified areas for Type I and II GTT are depicted in Figures 21 and 22. General definitions of low- and high-intensity use areas corresponding to the legends on the map figures are as follows:

***Engagement Areas* – areas of low-intensity support use**

Engagement areas reflect the range extent (air and/or ground) of low intensity and regular support to test or training actions. Activities that occur in the engagement area include the actual test event plus a wide range of support activities, such as target placement, instrumentation set up, camera placement, orbiting refueling aircraft, transmitter placement, and other low-intensity activities. For example, the engagement area for an electromagnetic test is an area in which transmitters and sensors may be placed or operated from aerial platforms or systems operating on existing roads or test and target areas.

***Debris Areas* – areas of high-intensity impact use**

The debris areas depicted on the air-to-air/surface-to-air figure reflect the range extent (air and/or ground) within which some disturbance is expected or feasible. This disturbance may be caused by falling debris from weapons impact, errant weapon or aircraft performance resulting in premature failure and debris, high-energy electromagnetic activity such as HEL or HPM, air or ground launch of weapons/guns, or other high-intensity activities.

***Target and Test Areas* – areas of high-intensity impact use**

Target and test areas include impact areas for ordnance use, instrumentation sites, weapon and target launch sites, weapon firing sites, special purpose ranges and facilities (described in Appendix E), and roads. RDAT&E and training events may occur within existing target and/or test areas in accordance with HE limitations as identified in Appendix B. RDAT&E and training events include air-to-air, surface-to-air, air-to-ground, surface-to-surface, energetics, electromagnetics, test track, ground troop training, directed energy, CIED, and unmanned systems.

Target areas provide impact areas for delivered ordnance, such as bullets, missiles, rockets, and bombs, and may include the use of stationary or mobile targets. Test areas, in addition to existing roads and instrumentation sites, are used to evaluate a weapon system or subsystem reaction to a variety of simulated conditions. A description of individual target and test areas is provided in Appendix B. North and South Range target and test areas are indicated in Figures 23 through 26.

***Focused EM Areas* – areas of high-intensity use**

Focused EM areas include major existing electromagnetic test areas and facilities. These electromagnetic test areas and facilities typically contain dedicated, developed sites (such as electronic warfare or target sites). Focused EM areas may also involve the placement of ancillary sensors, transmitters, and threats within the identified area and using existing roads, pads, and infrastructure. The focused EM areas are defined to indicate areas with the highest potential for EM operations and do not indicate areas of potential impact, as these electromagnetic test areas and facilities are placed as permanent or semi-permanent features requiring their own NEPA reviews for siting. In general, focused EM areas are areas that are expected to have electromagnetic emitting and receiving systems operating within them, but do not necessarily correspond to ground disturbances and other impacts throughout the entire area.

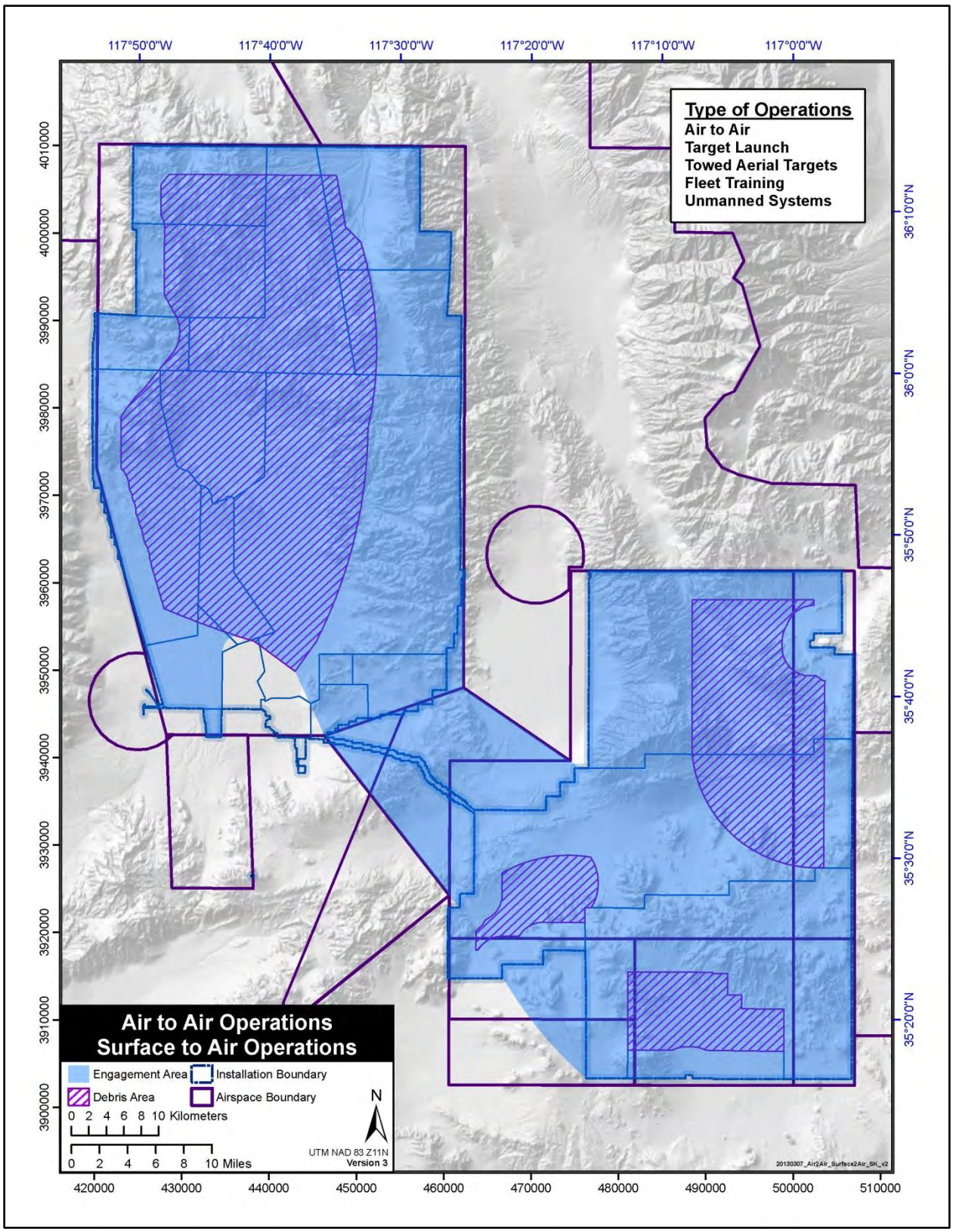


Figure 15: Air-to-Air and Surface-to-Air Operations

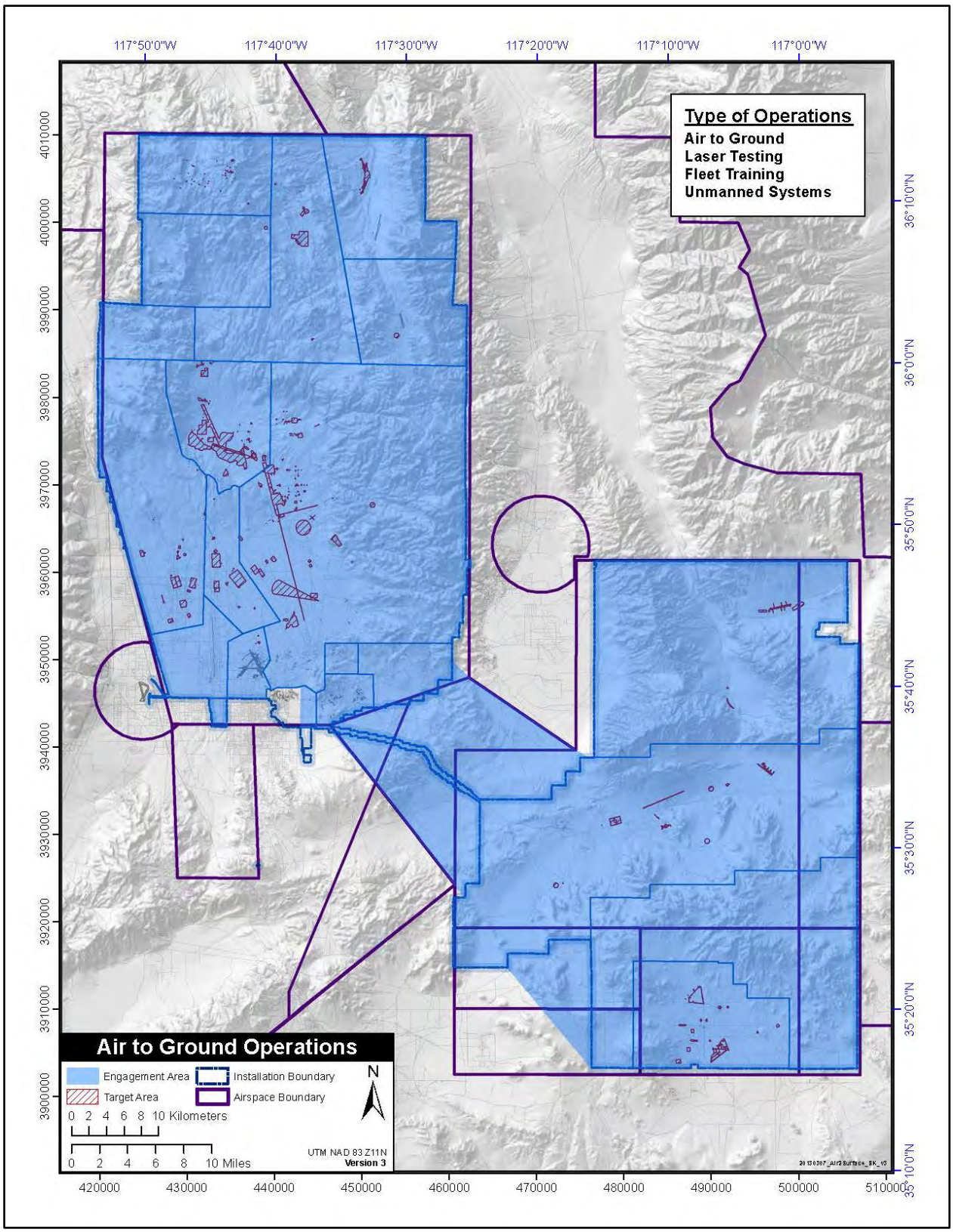


Figure 16: Air-to-Ground Operations

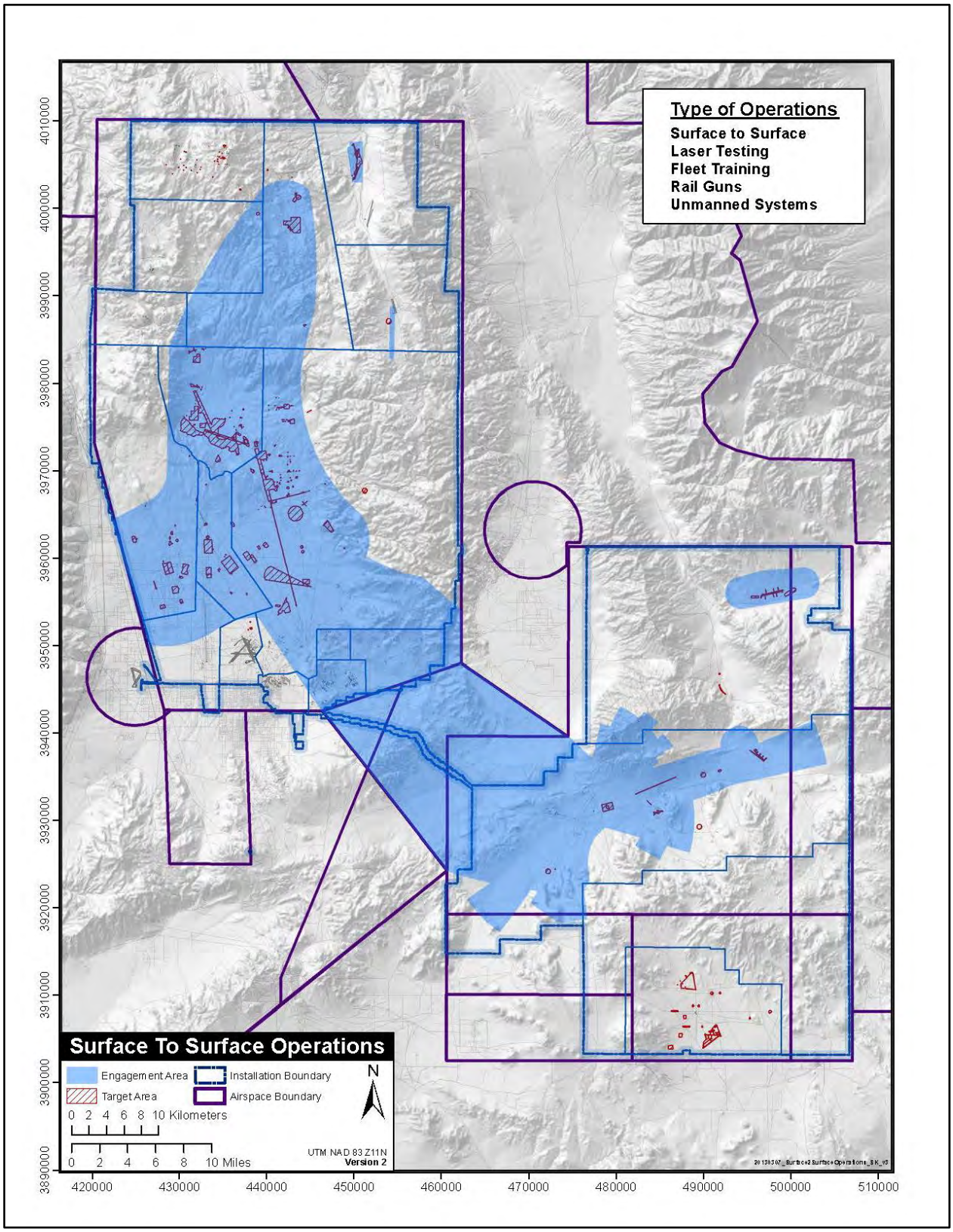


Figure 17: Surface-to-Surface Operations

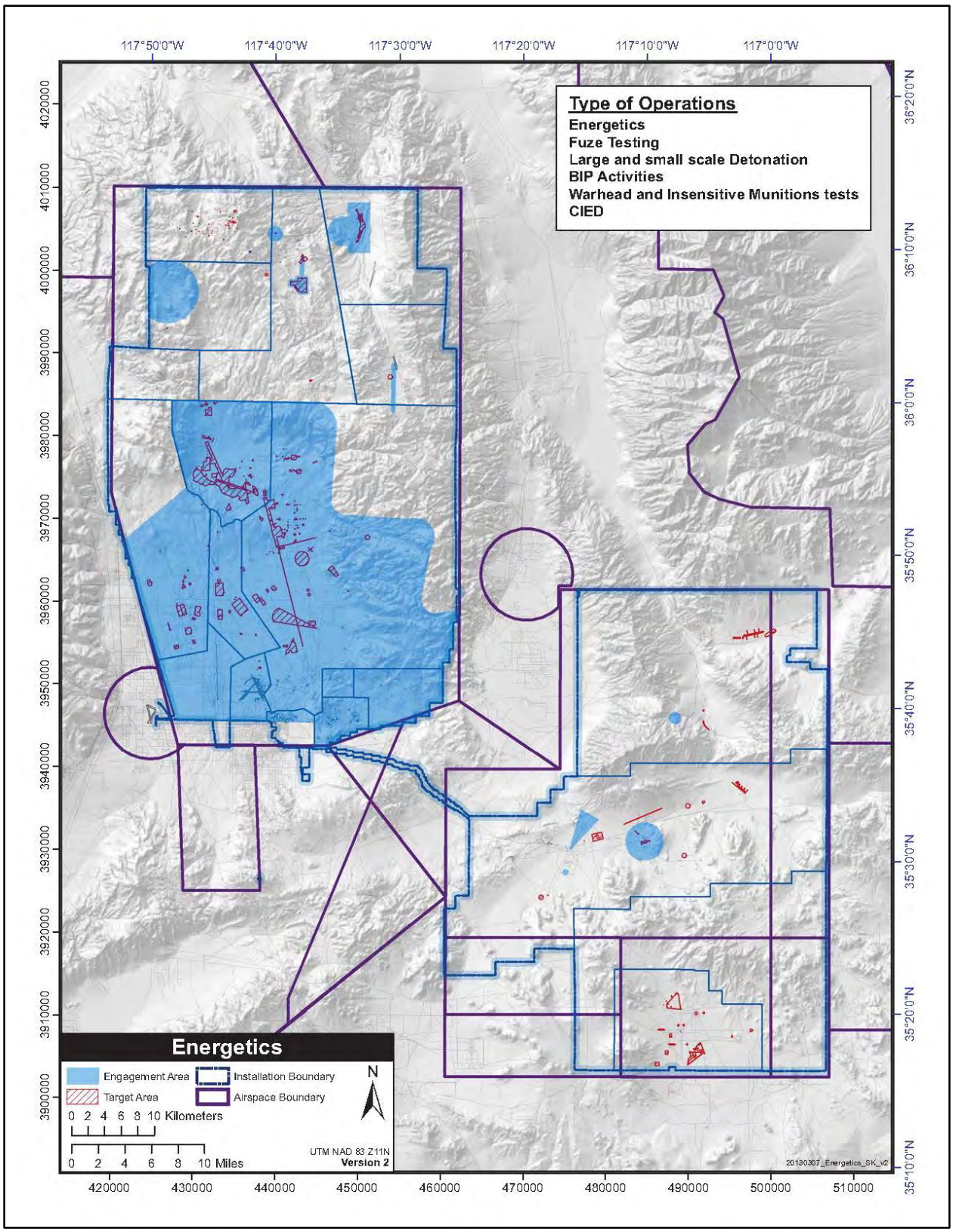


Figure 18: Energetics Operations

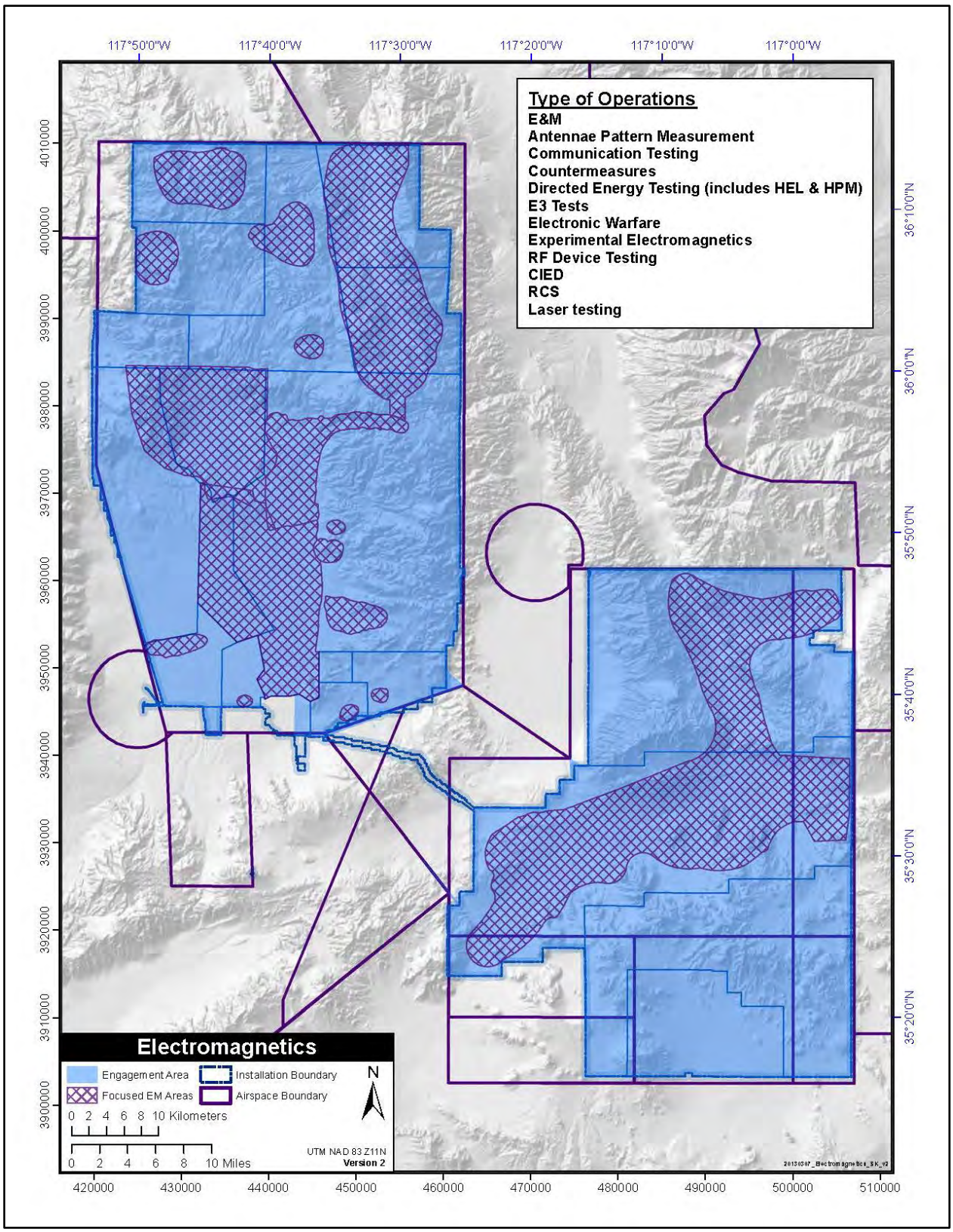


Figure 19: Electromagnetics Operations

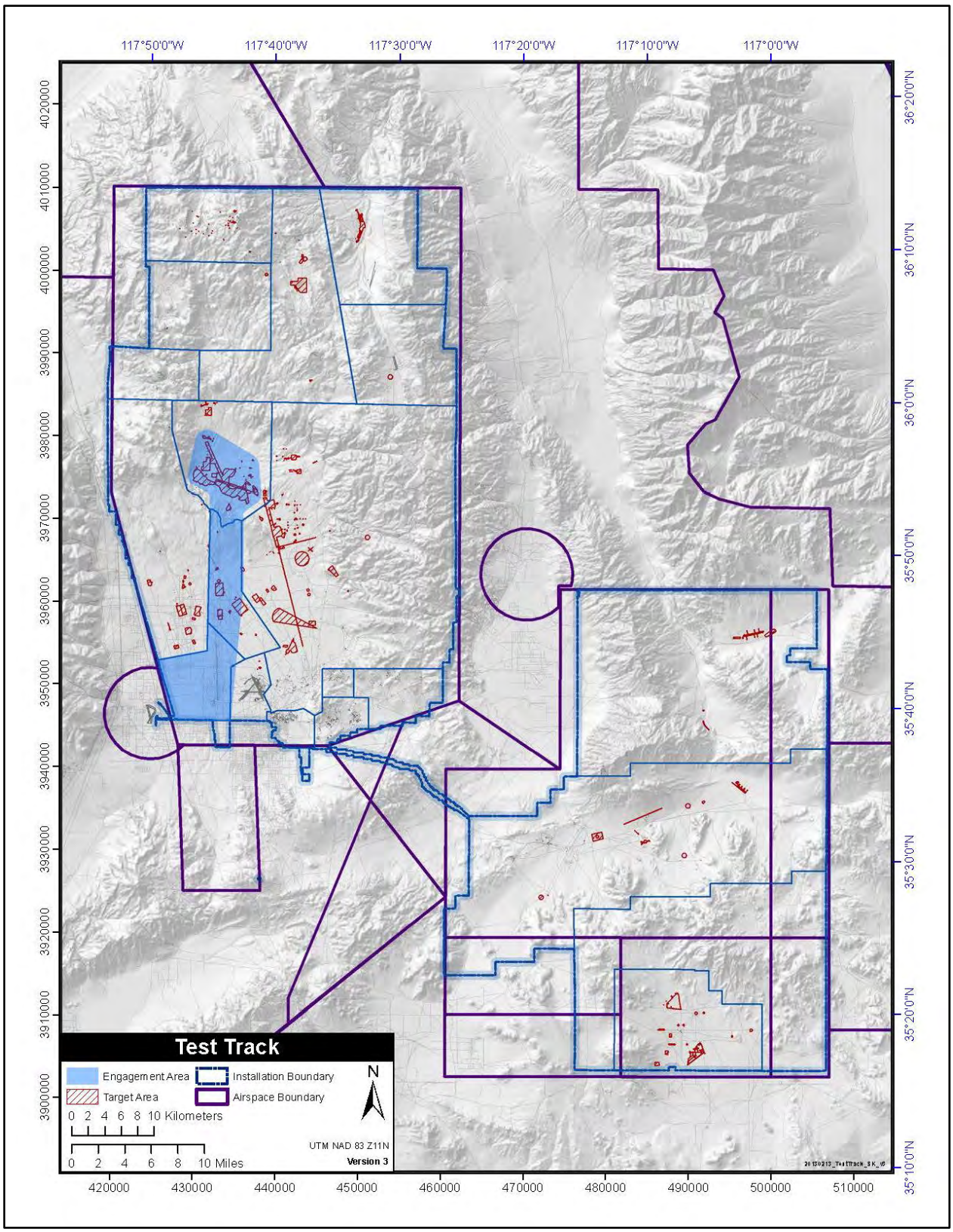


Figure 20: Test Track Operations

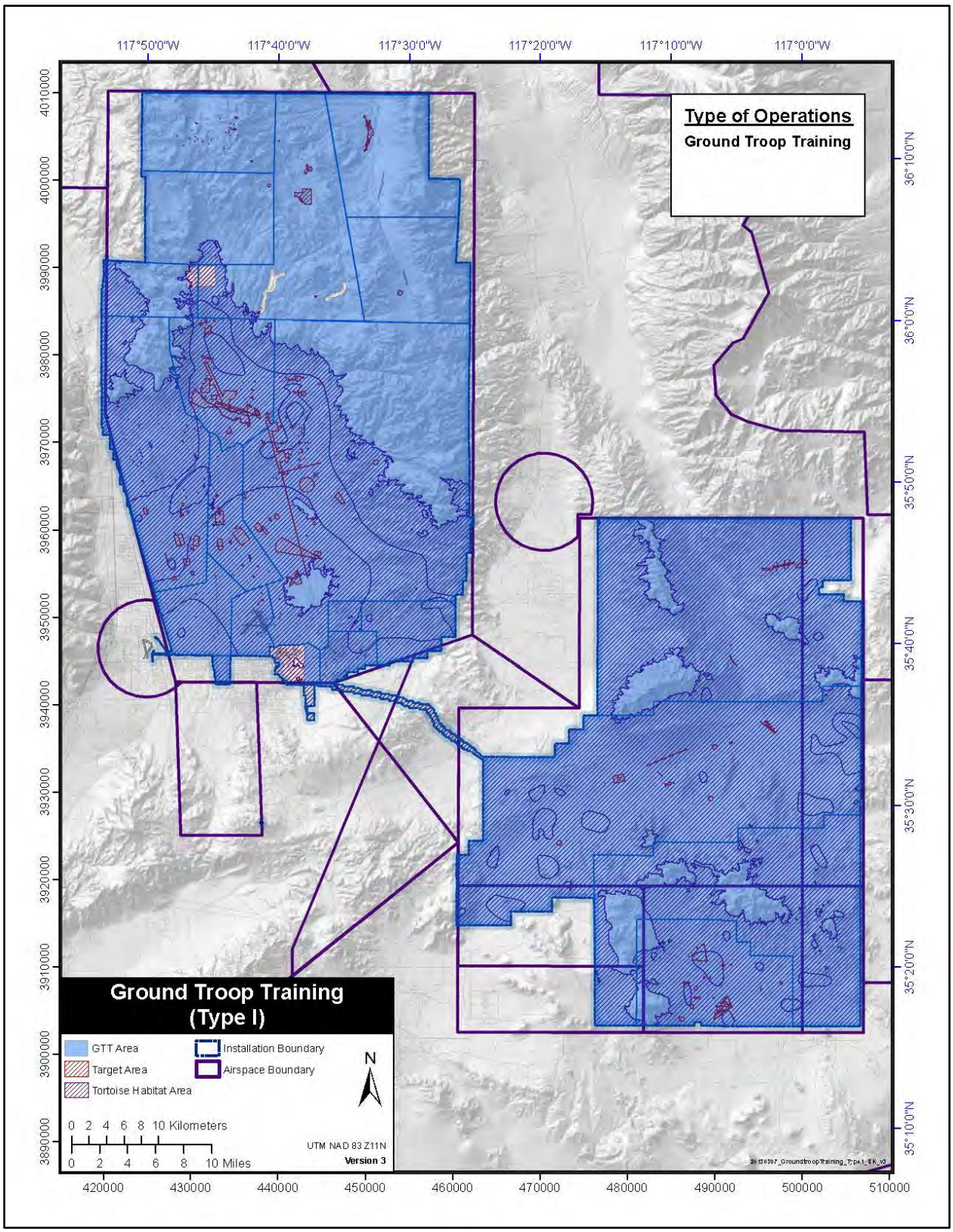


Figure 21: Ground Troop Training (Type I) Operations

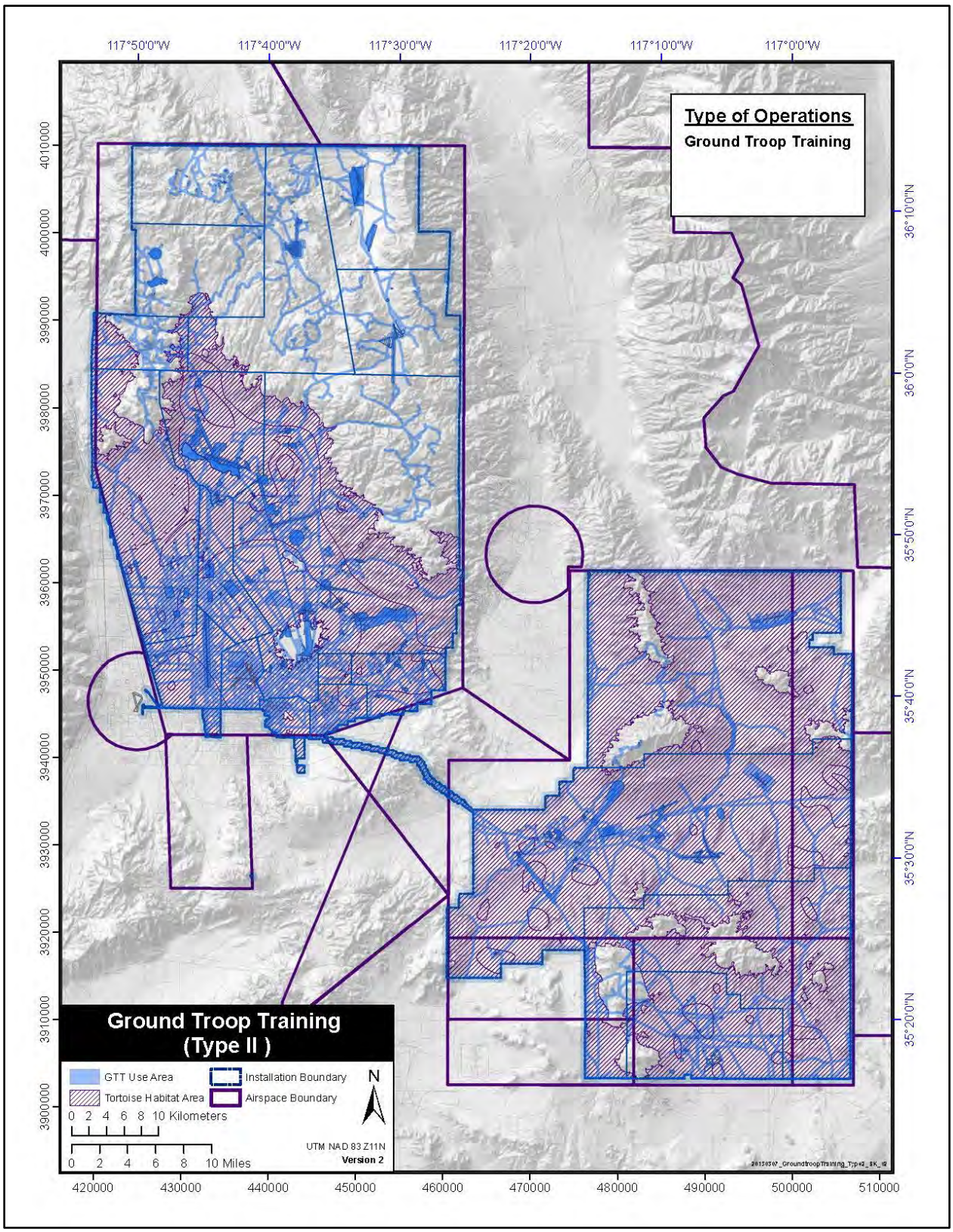


Figure 22: Ground Troop Training (Type II) Operations

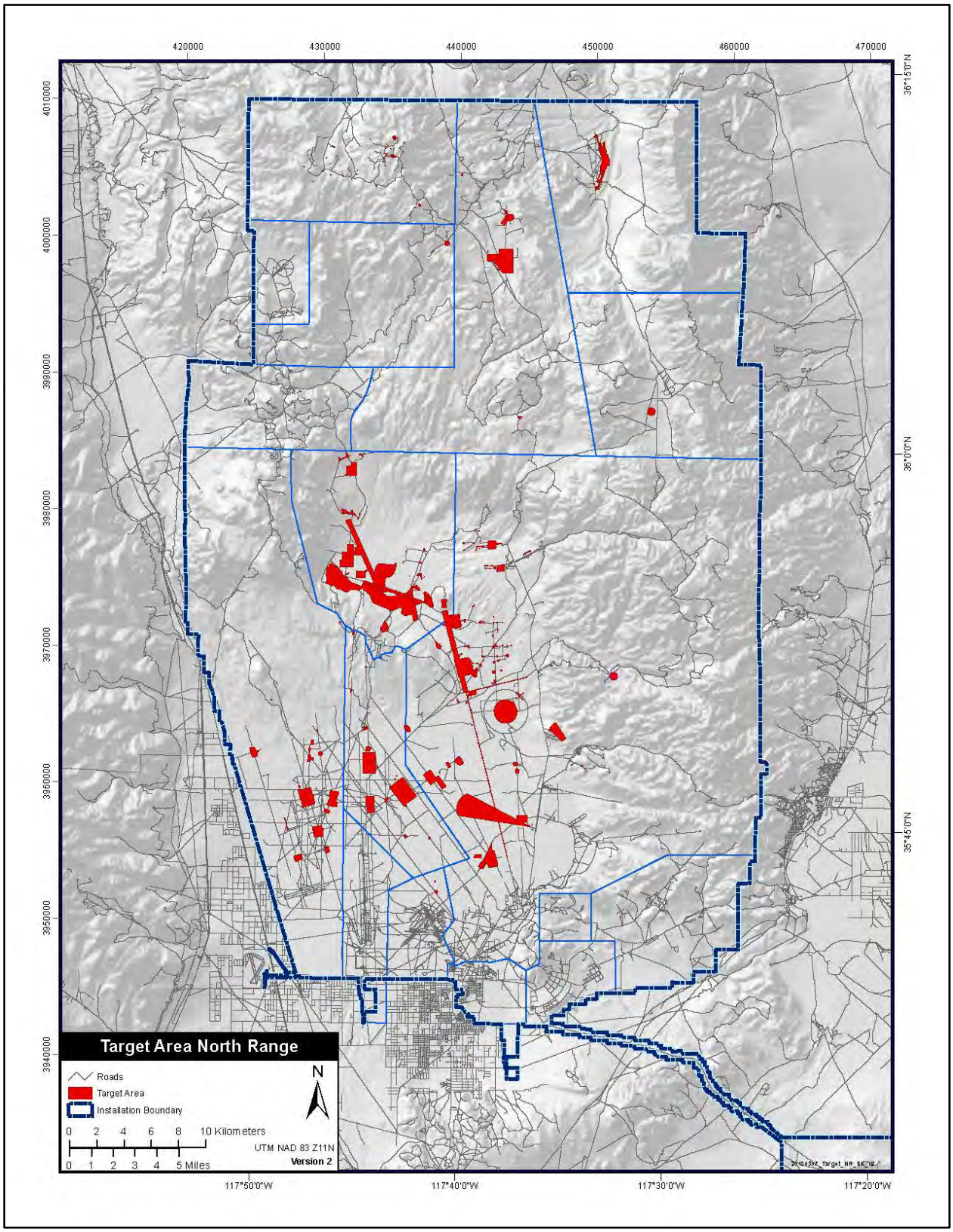


Figure 23: North Range Target Areas

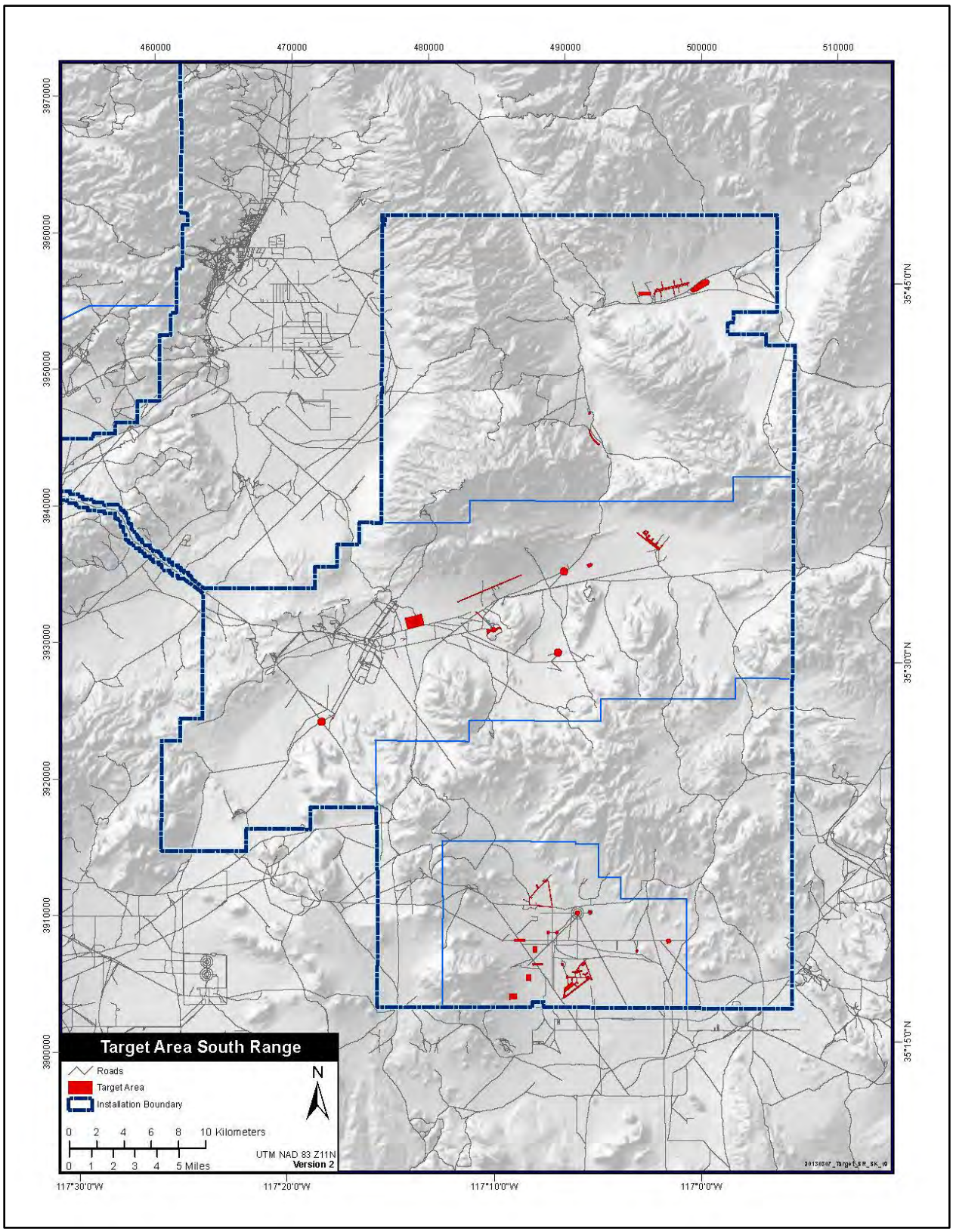


Figure 24: South Range Target Areas

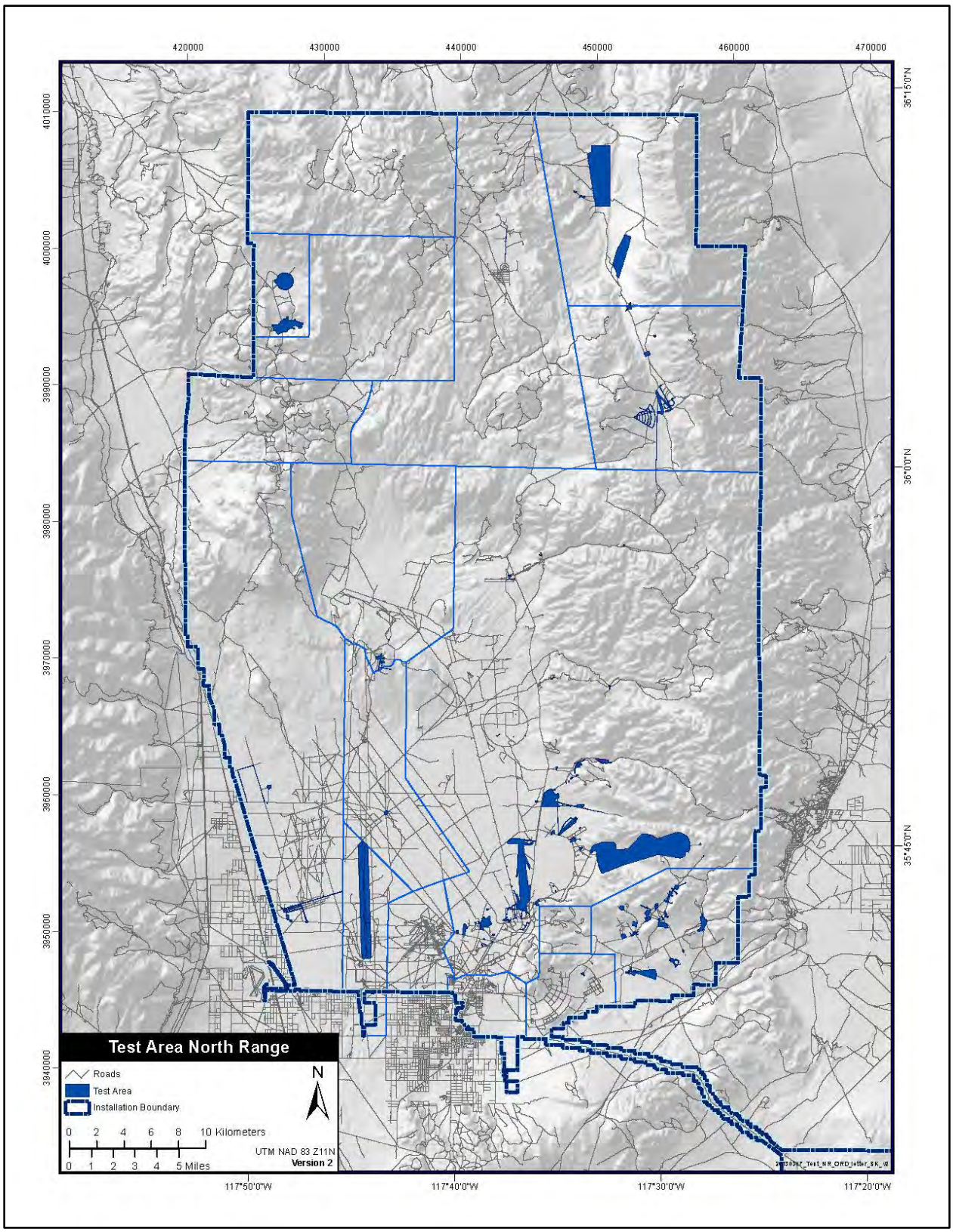


Figure 25: North Range Test Areas

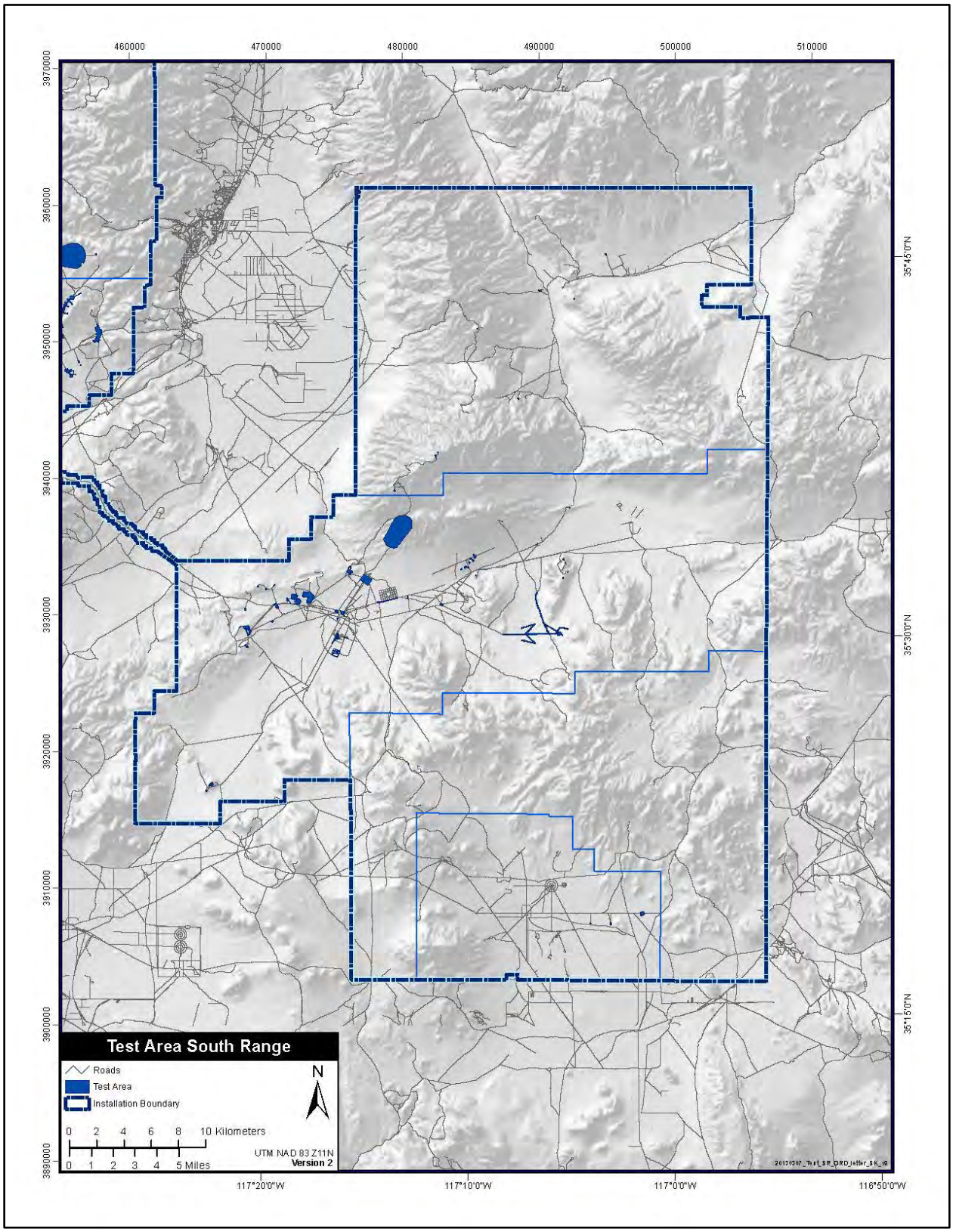


Figure 26: South Range Test Areas

Expansion of Unmanned Systems Operations

Types of Unmanned Systems

Unmanned systems (air and ground) play an important role in military theaters of operation, and their combat use will continue to expand as described in the *Unmanned Systems Roadmap (2007-2032)*, prepared by the Office of the Secretary of Defense, and dated 10 December 2007. NAWCWD has primarily supported the development of smaller UAS and UGS, but must expand that support to include the larger and more capable systems under development to meet emerging theater requirements. Categories of unmanned systems anticipated to operate throughout NAWSCL include those listed in Table 2.

Table 2: Categories of Unmanned Systems

<table>
<tr><th colspan="5">Unmanned Aerial Systems (UAS)</th></tr>
<tr><th>UAS Category</th><th>Maximum Gross Take-off Weight (lbs.)</th><th>Normal Operating Altitude (ft.)</th><th>Speed (Knots Indicated Air Speed [KIAS])</th><th>Example Systems</th></tr>
<tr><td>Group 1</td><td>0-20</td><td>< 1,200 AGL</td><td>100</td><td>Wasp III, FCS Class I, TACMAV, RQ-14A/B, BUSTER, BATCAM, RQ-11B/C, FPASS, RQ-16A, Pointer, Aqua Terra, Puma</td></tr>
<tr><td>Group 2</td><td>21-55</td><td>< 3,500 AGL</td><td rowspan="2">< 250</td><td>Vehicle Craft Unmanned Aircraft System, Scan Eagle, Silver Fox, Aerosonde</td></tr>
<tr><td>Group 3</td><td>< 1,320</td><td rowspan="2">< 18,000 MSL</td><td>RQ-7B, RQ-15, STUAS, XPV-1, XPV-2</td></tr>
<tr><td>Group 4</td><td rowspan="2">> 1,320</td><td rowspan="2">Supersonic</td><td>MQ-5B, MQ-8B, MQ-1A/B/C, A-160</td></tr>
<tr><td>Group 5</td><td>> 18,000 MSL</td><td>MQ-9A, RQ-4, RQ-4N, Global Observer, N-UCAS</td></tr>
<tr><th colspan="5">Unmanned Ground Systems (UGS)</th></tr>
<tr><th>UGS Category</th><th colspan="2">Maximum Gross Weight (lbs)</th><th colspan="2">Example Systems</th></tr>
<tr><td>Light Weight (Group 1)</td><td colspan="2">0 - 5,000</td><td colspan="2">BomBot, Dragon Runner, RONS, Warrior</td></tr>
<tr><td>Medium Weight (Group 2)</td><td colspan="2">5,001 - 15,000</td><td colspan="2">MULE, ARTS, MV4, Crusher</td></tr>
<tr><td>Heavy Weight (Group 3)</td><td colspan="2">> 15,000</td><td colspan="2">ARV, MACE, ABV</td></tr>
</table>

Operational Characteristics of Unmanned Systems

Unmanned systems operations may range from a single system, to a swarm of UAS, to large-scale integration testing between UAS and UGS. There will also be requirements for integrated testing between UAS and manned aircraft. Testing of unmanned systems will support the development of new generation unmanned platforms and their associated sensors and payloads. Multiple concurrent operations could occur on a daily basis throughout the range.

UAS have longer persistence and use a broader range of propulsion systems, such as battery, solar panel, fuel cell, jet, diesel, and reciprocating engines; therefore, the duration of operations may increase compared to manned systems, which will subsequently lead to an increase of night operations. UAS will operate anywhere on the North and South Ranges in disturbed areas such as roads, road shoulders, instrumentation pads, and target and test areas. UAS will utilize the China Lake special use airspace and may operate within R-2508 if capable of flying at or above 20,000 feet.

UAS may be air- or ground-launched using conventional or unconventional means. Larger categories of UAS typically use established airfields and runways for take-off and landing. Smaller categories of UAS may be launched on-range or use unconventional take-off systems such as catapults, slingshots, or by hand. In addition, UAS may be launched from platforms such as aircraft, vehicles, or tethering towers. Recovery methods may include conventional landing, vertical/short takeoff and landing (VSTOL), net, wire, arresting gear, dirt strip, or intentional crash.

UGS will include both wheeled and tracked vehicles. UGS will predominantly operate on existing roads, although small systems may operate off-road in approved areas.

Associated test and training activities, previously discussed in Section 2.0, would be required with additional off-road requirements to conduct activities such as testing of smaller UGS categories, conducting launch and recovery, establishing central command centers, and retrieving systems (and any released hazardous substances) that have either crashed or otherwise failed to operate.

Payloads and expendables will be similar to those associated with manned aircraft, with the exception of micro-munitions. Micro-munitions may be expended in the same area they are launched and recovered. Unmanned systems may also deploy many of the sensors for intelligence, surveillance, and reconnaissance (ISR); electro-optical; and infrared normally associated with manned systems. Operations will utilize the full spectrum of targets available at NAWSCL and, in some cases, UAS will serve as the target themselves (e.g., counter-UAS testing).

Expansion of Directed Energy Operations

Types of Directed Energy Systems

A DE weapon emits energy in a manner that offers the potential to deny, disrupt, disable, or destroy target electronics or to cause mechanical damage to structures, platforms, or other equipment. It can also provide a non-lethal anti-personnel capability. DE weapons include the HEL and HPM systems described below.

High-Energy Laser

Laser systems, including HEL weapons, deposit large amounts of energy within small areas by taking advantage of three basic principles:

1. Laser systems emit monochromatic light, which is light of one wavelength (or color). In contrast, white light is a combination of many wavelengths of light.
2. Lasers emit light that is highly directional, meaning that laser light is emitted as a relatively narrow beam in a specific direction. Ordinary light (e.g., from a light bulb) is emitted in many directions from its source.
3. Laser light is said to be coherent, which means that the wavelengths of the laser light are in phase in space and time. Ordinary light is often a mixture of wavelengths that do not travel in phase.

HEL weapons are intended to damage or destroy enemy systems. These weapons may be integrated onto land, aircraft, and ship platforms and will be used to enhance area defense, aircraft self-protection, strategic and tactical missile defense, and precision strike. HEL weapons remain focused over a great distance, thus providing significantly more power on a target.

Types of HEL systems anticipated for testing at NAWSCL include, but are not limited to, solid-state, fiber, carbon dioxide (CO_2), free electron, and closed-cycle chemical oxygen iodine laser (COIL). Power levels are expected up to and including megawatt class, and wavelength levels will range from nanometers to micrometers. COIL have the potential to release chemicals into the atmosphere, but will only be tested in non-atmospheric release conditions. Other chemical agents, such as sulfur hexafluoride (SF_6), also have the potential to be released, but will be handled in accordance with existing hazardous material control procedures. A summary of laser classes is provided in Appendix F.

High-Power Microwave

HPM systems are generally designed to produce effects on electronics systems. These counter-electronics systems, which operate across a broad range of the microwave frequencies, are typically characterized as having a short, intense energy pulse that can yield relatively high voltage surges in targeted electronics resulting in neutralization or damage to those systems. HPM weapons may be evaluated for health hazards using the same methodology used for other microwave systems, such as radars or communication systems, by characterizing the system's total power relative to its pulse width and repetition rates. In accordance with the American

National Standards Institute (ANSI)/Institute of Electrical and Electronics Engineers (IEEE) C95.1*, Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,* humans may be exposed to HPM systems at an apparent peak power value much higher than traditional RF systems. This is due to the HPM system demonstrating very high peak power for a very short period, as opposed to a lower peak power level over a long duration (e.g., continuous duty).

Non-lethal antipersonnel HPM systems operate at relatively high frequency (approximately 100 gigahertz [GHz]). At this frequency, the microwave energy will penetrate 1/64 inch of human skin. These weapons can be operated as continuous wave or pulsed wave systems and emit radiation that is absorbed by the target's skin, causing rapid heating and pain. These systems have little effect on electronics. Non-lethal antipersonnel HPM systems tests on human subjects resulted in skin burns (caused by induced electrical currents rather than water-bond excitation) in less than one-tenth of one percent of test subjects (8 in over 11,000 exposures).

HPM weapons may be integrated onto land, aircraft, and ship platforms and will be used to enhance both counter-electronic and non-lethal anti-personnel capabilities. Types of HPM systems anticipated for testing at NAWSCL include, but are not limited to, narrowband, wideband, and ultra wideband. HPM operations will be predominantly in support of testing as defined by MIL-STD-464C, *Department of Defense Interface Standard for Electromagnetic Environmental Effects (E^3) 464,* and at levels indicated in Tables 3 and 4. In addition, non-lethal HPM utilizes a high-power beam of electromagnetic radiation in the form of high-frequency millimeter waves at 95 GHz (a wavelength of 3.2mm).

Table 3: Electro-Magnetic Environment for Narrowband HPM

Frequency Range (MHz)	Electric Field at Target (kV/m @ 1 km)	Peak Radiated Power (GW)	Practical Antenna Gain (dB)	Equivalent Isotropically Radiated Power (EIRP) (TW)
400 – 1000	100	33	40	333
1000 – 4000	400	169	45	5333
4000 – 5999	1000	105	55	33333
6000 – 13999	2500	659	55	208328
14000 – 27999	2500	659	55	208328
28000 – 40000	500	8	60	8333

Table 4: Electro-Magnetic Environment for Wideband HPM

Frequency Range (MHz)	Broad-Band Electric Field Distribution at Target (mV/m/MHz @ 100 m)	Peak Radiated Power (GW)	Practical Antenna Gain (dB)
30 – 150	33000	5	20
150 – 225	7000		
225 – 400	7000		
400 – 700	1330		
700 – 790	1140		
790 – 1000	1050		
1000 – 2000	840		
2000 – 2700	240		
2700 – 3000	80		

Operational Characteristics of Directed Energy Systems

Testing of DE systems will support the ongoing development of non-kinetic weapons in response to theater requirements. HEL and HPM testing would include air-to-air, air-to-ground, surface-to-air, surface-to-surface, and electromagnetic scenarios as well as static tests. Tests would occur on travel surfaces (e.g., roads, turnouts, or parking lots), target areas, test sites, and instrumentation sites. Multiple concurrent operations could occur on a daily basis across NAWSCL. Some types of equipment/facilities unique to DE testing include control shelters, personal protective equipment, atmosphere and beam profiling equipment, and use of large electrical generators.

HEL and HPM safety protocols are in place to mitigate risk and prevent potential mishaps. DE testing is constrained by power levels and personnel safety issues enforced by Range Safety, the Department of Defense (DoD) Laser Clearing House, and the Naval Electromagnetic Spectrum Center. NAWCWD will conduct operations in accordance with existing Range Safety procedures and standards, such as the ANSI/IEEE C95.1, to mitigate the potential effects to human health and the environment.

Appendix A: Targets Used at NAWSCL

Target	Target Description
Bullseye Class Targets	Bullseye class targets are simple stationary targets. Examples include, but are not limited to, plywood stands, highway cones, etc.
Simple Structural Targets	Simple structural targets are built to resemble simple elementary structures. Examples include, but are not limited to, a stack of seavans or Container Express (CONEX) boxes arranged to replicate a threat shape or a stack of seavans with a cosmetic fascia, such as a painted plywood overlay, to simulate a building or structure.
High Fidelity Structural Targets	High fidelity structural targets are robust structures of a broad variety, typically built to meet specific customer requirements. These targets are constructed using structural concrete, steel, or other common building supplies and are used to simulate structures that warfighters must engage in the theater. Examples include, but are not limited to, bunkers, smoke stacks, command centers, etc.
Anti-Radiation Missile (ARM) Targets	ARM targets are special use targets designed to replicate an enemy surface-to-air missile (SAM) site. They are typically arranged to visually resemble a SAM site and are enhanced to emit radio frequency (RF) energy in manner similar to a real world SAM site.
Stationary Vehicular Targets	Stationary vehicular targets include any type of vehicle from which all hazardous liquids, such as oil, gasoline, jet fuel, hydraulic fluid, etc., have been removed. Examples include, but are not limited to, cars, trucks, boats, airplanes, etc.
Mobile Land Targets	Mobile land targets include objects moving on land. Examples include, but are not limited to, a man on horseback, dune buggies, cars, pickup trucks, tractor-trailer rigs, tanks, other types of on- or off-road vehicles, etc. Vehicular targets may be manned, unmanned but controlled remotely with a man in the loop, or operated autonomously using programmed waypoints or artificial intelligence. Test scenarios may involve a single target, multiple targets operating simultaneously, or targets in convoy formations. Mobile land targets can also operate from low to high speeds to simulate evasive enemy tactics. Mobile land targets may be completely destroyed during a test and end up as a pile of burning tires, twisted metal, and residual fuel that must be cleaned up and removed from the range. Special precautions are taken to minimize debris and residual petroleum products when these types of targets are prepared to support a live fire test.
Aerial Targets	Aerial targets include towed banners and unmanned air platforms ranging from small hand launched remote controlled (RC) planes, to subsonic and supersonic aerial target drones, to full-scale aircraft, including unmanned aerial systems (UAS). Aerial targets may be air or ground launched and are fired upon or targeted while in the air. These targets are often recovered intact or with only minor damage after test completion.

Target	Target Description
No Drop Sensor Targets	No drop targets are typically used to test sensors and are not intended for actual weapon impact. Sensor targets encompass the electromagnetic and acoustic spectrums. They may include laser targets to calibrate a targeting system, an array of contrasting colors painted on a surface to test the discrimination ability of an electro-optical (EO) sensor, an array of infrared (IR) sources to test the discrimination ability of thermal sensors, RF sources to calibrate sensors and seekers, corner reflectors to test radar system performance, and other types of enhanced target features.
Land Feature Targets	This type of target includes natural or man-made land features that can be used as a target or reference point. Examples include, but are not limited to, previously disturbed land areas, vegetated areas, geotechnical areas, caves, mines, tunnels, airfields, runways, paved or graded roads, etc. Land features are typically used to test sensors with unique detection capabilities on a broad range of earth features. Shapes to simulate improvised explosive devices (IEDs), mines, or other threats may be buried in previously disturbed land areas for such testing. Buried targets may be removed after the test and the ground restored to original contours or they may be left in place for future use. Explosive munitions are not commonly used on these types of targets.

Appendix B: NAWSCL Target and Test Areas

Baker Range Target and Test Areas

Name	Description	Target/Test Area	High Explosive (HE) Use	Buffer
Baker Range Operation Area (Op Area)	General Baker Range	n/a	Yes	n/a
B-1B/B-1C	Historically bladed and cleared area	Target	No	200 m
B-1A	Historically bladed and cleared area	Target	Yes	200 m
B-1D	Historically bladed and cleared area	Target	No	200 m
B-1F	Historically bladed and cleared area	Target	Yes	200 m
B-2	Historically bladed and cleared area	Target	Yes	200 m
B-2 counter-improvised explosive device (CIED)	CIED test area	Test	No	None
B3/B3 CIED	Historically bladed and cleared area	Target	Yes	200 m
B-4	Sled track facility, accidental release sled track facility and target, calibration track, general purpose test area	Test	Yes	100 ft CE PR241/367
Baker BIP	Range clearance and CIED testing area	Test	Yes	Test Dependent
LB	Support facilities and target areas	Target	Yes	200 m
Sandy Van	Precision guided munitions (PGM) target	Target	No	200 m
Condor TC-4 Complex	PGM target	Target	No	200 m
Condor TC-2	PGM target	Target	No	200 m
Midas West	Paved instrumentation site	Test	No	None

Charlie Range Target and Test Areas

Name	Description	Target/Test Area	HE Use	Buffer
Charlie Range Op Area	General Charlie Range	n/a	Yes	n/a
C-1	Historically bladed and cleared area	Target	Yes	200 m
C-2	Historically bladed and cleared area	Target	Yes	200 m
C-3 #1	Historically bladed and cleared area	Target	Yes	200 m
C-3 #2	Historically bladed and cleared area	Target	Yes	200 m
C-3 SAM Site	Air-to-Surface Target	Target	Yes	200 m
FLR-3	Weapon impact area	Target	No	200 m
North Charlie Target	Weapon impact area & launch/firing area	Target	Yes	Reduced buffer – Command decision
Supersonic Naval Ordnance Research Track (SNORT)	Sled track facility & Target Area Maximum net explosive weight (NEW) of 50,000 lbs. 1) 2,500 lb. NEW North Detonation Site 2) 700 lb. NEW West Target Yard & VBAR Track 3) 70 lb. NEW Ejection Seat Test Area	Test	Yes	200 m

Airport Lake Target and Test Areas

Name	Description	Target/Test Area	HE Use	Buffer
Airport Lake (APL)	Large target playa with associated target roads and surrounding area	Target	Yes	200 m
HABR	Multiple weapon impact areas throughout the Coso Wash drainage area	Target	Yes	200 m
Sams Town	Large bladed and cleared weapon impact area	Target	Yes	200 m
Stormville	Weapon impact area	Target	Yes	200 m
Convoy Complex	Weapon impact areas	Target	Yes	200 m
G-4	Sled Track facility and target areas Maximum net explosive weight (NEW) of 30,000 lbs.	Test	Yes	200 m
Gun Butts	Weapon impact area	Target	Yes	200 m
Maverick Road	Target road complex and weapon impact area to the north of Maverick Road and to the shore of Airport Lake	Target	Yes	200 m
Maverick Road Drop Zone	Drop Zone	Target	No	200 m
Vaby	Weapon impact area and instrumentation site	Target	Yes	200 m

George Range Target and Test Areas

Name	Description	Target/Test Area	HE Use	Buffer
PMTC	Cleared and bladed weapon impact areas	Target	Yes	200 m
FAE	Cleared and disked weapon impact area	Target	Yes	200 m
Shrike	Distributed target complex	Target	No	200 m
G-6	Surface launch facility and weapon impact area (including Deadman Canyon, phalanx gun test site, and firing fan area to the west)	Target	No	200 m
Bull pup	Distributed target complex	Target	Yes	200 m
X-3 Centerline	Target areas (inclusive of roadways), includes G-1/G-2 weapon impact areas and external ballistics range impact areas	Target	Yes	200 m
G-9	Cleared and bladed weapon impact area	Target	No	200 m
G-1	Weapon impact area	Target	Yes	200 m
G-2	Surface launch facility and weapon impact area	Target	Yes	200 m
GZAP	Cleared and bladed weapon impact area	Target	Yes	200 m
Hans Site	Cleared and paved instrumentation site	Test	No	None
Drop Zone	Cleared and disked weapon impact area	Target	Yes	200 m
J-90	Surface-to-surface launch facility	Test	No	None
JCAT	Joint Combat Assessment Team (JCAT) training area	Training	No	None
Kennedy Stands	Weapon impact area	Target	Yes	200 m
3”/5” Impact Areas	Weapon impact areas	Target	Yes	200 m
Midas East	Paved instrumentation site	Test	No	None

Name	Description	Target/Test Area	HE Use	Buffer
Mountain Springs Canyon	Borrow Pit test area in Mountain Springs Canyon	Test	No	None
Sweetwater Wash	Drop Zone	Target	No	200 m
Tower 11 Gun Line	Large caliber gun firing line & target	Test	No	200 m
PMT West	Cleared and bladed weapon impact area	Target	Yes	200 m
Pole Target	Weapon impact area	Target	Yes	200 m
RAMEX	Bullet impact complex	Test	No	None
Redeye Complex	Surface-to-surface or surface-to-air target impact area	Target	Yes	200 m
Sandia	Penetrator test site	Test	Yes	200 m
K-2 Gun Range	Live fire survivability range. Includes HFI RTS Site	Test	Yes	None
HIVAS HIVAS 2 LFT&E	Test site for aircraft live fire survivability/lethality, aerodynamic, and cook-off tests, and remote controlled run-up and operation of aircraft, sea vehicles and/or missile engines and components; 50 lbs. net explosive weight (NEW)	Test	Yes	None
Minideck	Flight deck simulated environment. Up to 240,000 gallons/year burned	Test	No	None
Burn Room	Testing of fire fighting reagents on small scale fires	Test	No	None
Area R	Warhead Test Sites, Includes Barricades 1-8. NEW: - 100 lbs Barricades 1 & 2 - 150 lbs Barricade 6 - 200 lbs Barricades 3-5	Test	Yes	1,000 ft (Barr 3-5)
6” Gun Test	Small scale detonations/bullet impact testing	Test	Yes	100 ft

Name	Description	Target/Test Area	HE Use	Buffer
Thompson Lab (includes Pearson Lab)	Small Scale Detonation testing	Test	Yes	100 ft
Burro Canyon	Ordnance test and evaluation (T&E) test areas and open burn/open detonation (OB/OD) facility	Test	Yes*	200 m
ALAST	Laser guidance & optical system target	Test	No	None

* Right side of Burro Canyon is the Open Burn/Open Detonation Facility used to treat explosive hazardous waste. The facility has a permitted NEW of 50,000 lbs. Left side of Burro Canyon is an Ordnance T&E test area with a NEW limit up to 20,000 lbs used for warhead performance testing.

Coso Range Target and Test Areas

Name	Description	Target/Test Area	HE Use	Buffer
Coso Target Complex	Military target areas	Target	No	200 m
Coles SAM Site	Weapon Impact area	Target	Yes	200 m
ELOY Site	Weapon impact area	Target	No	200 m
Lower Cactus Flats	Ordnance/Warhead Detonation Site; Counter-Improvised Explosive Device (CIED) 30,000 lbs NEW	Test	Yes	200 m
Upper Cactus Flats	Ordnance/Warhead Detonation Site; CIED 200,000 lbs. net explosive weight (NEW)	Test	Yes	200 m

Coles Flat Target and Test Areas

Name	Description	Target/Test Area	HE Use	Buffer
Coles Flat	Distributed target complex	Target	No	200 m
Coles Flat Counter-Improvised Explosive Device (CIED)	CIED test site	Test	No	None
Safeway	Cleared and bladed weapon impact area	Target	Yes	50 m
Ship Site (Wild Horse Mesa)	Weapon impact area	Target	Yes	200 m
Drop Zone	High altitude simulated drops/recovery zone	Target	No	200 m
CP-42	Explosive Ordnance Disposal (EOD) Training Area/Weapon	Test	Yes*	200 m

*Use of HE at CP-42 may require additional NEPA documentation prior to use

Darwin Wash Target and Test Areas

Name	Description	Target/Test Area	HE Use	Buffer
Joint Counter-Improvised Explosive Device (IED) Facility (JCIF)	Linear test facility	Test	No	None
Explosive Ordnance Disposal Training & Evaluation Unit One (EODTEU-1)	Naval Expeditionary Combat Command Training Complex	Training	Yes	None
Box Canyon	Explosive test arena and electromagnetic test area; 50 lbs. net explosive weight (NEW)	Test	Yes	200 m

Junction Ranch Target and Test Areas*

Name	Description	Target/Test Area	HE Use	Buffer
South 40 (including S40 Roadway)	Radar cross-section (RCS) horizontal range; electromagnetic and general purpose test facility	Test	No	None
Junction Ranch House Complex	Electromagnetic and general purpose test site	Test	No	None
North 40	Look down RCS range; electromagnetic and general purpose test facility	Test	No	None
17 Degree Lookdown	Approved test site near Tennessee Springs	Test	No	None
Parrot Peak	Electromagnetic and general purpose test site and instrumentation sites	Test	No	None
EVR Drop Zone	Drop Zone	Target	No	200 m
Shot-put Arena	Electromagnetic and general purpose test site	Test	No	None
GPS Arena	Electromagnetic and general purpose test site	Test	No	None
PRFE Site	High-power microwave (HPM) Testing	Test	No	None

*All Junction Ranch test sites are both electromagnetic and general purpose test sites.

Randsburg Wash Range Target and Test Areas

Name	Description	Target/Test Area	HE Use	Buffer
Air Force	Electronic warfare (EW) test site	Test	No	None
Bear	EW test complex	Test	No	None
Fuse Range	Proximity fuse range	Target	Yes	200 m
Gun Range	Large caliber gun firing range and target area	Target	Yes	200 m
Ghost	EW test site	Test	No	None
Garcia Site	EW test site	Test	No	None
North Tower Site	Test/target area used for suspension of ordnance or other test items	Test	Yes	200 m
South Tower Site	Ordnance test site	Test	Yes	200 m
Igloo	Large scale detonation range	Test	Yes	200 m
Electronic Warfare Sites	Distributed EW test sites throughout South Range, including hilltops, roads, and sites used by mobile assets	Test	No	None
Charlie Airfield	Weapon impact area	Target*	Yes	200 m
C-130 Strip	Remote expeditionary airfield and decoy recovery area	Target	No	200 m
Drop Zone	Simulated in-theater air drops and recovery area north of C-130 Strip	Target	No	None
Unmanned Aerial Vehicle (UAV) Site	Remote UAV airstrip and hangar	Test	No	None
Land Sites 1 – 4	EW test site complexes; unmanned aerial system (UAS)/unmanned ground systems (UGS)	Test	No	None
Wicker Site	EW test site	Test	No	None
Star	EW test site	Test	No	None

Name	Description	Target/Test Area	HE Use	Buffer
Fresh Site (FRS)	EW site	Test	No	None
Flash Site	UV laser stimulation testing; UAS/UGS; counter-improvised explosive device (CIED) test area	Test	No	None
Marine	EW test site	Test	No	None
MOM	EW testing complex	Test	No	None
Northwest Site (NWS)	EW test Site	Test	No	None
Parking Lot	Signature measurement parking lot with surrounding track for mobile targets	Test	No	None
Photo Knob	EW test site – portable units; ground troop training observation point	Test	No	None
TSPI	EW site	Test	No	None
Tower 9	EW test site	Test	No	None
SS-1	EW test complex (includes Collimation Tower)	Test	No	None
SS-2	EW test complex	Test	No	None
SS-3	EW test complex (includes Collimation Tower)	Test	No	None
YS-1	EW test site	Test	No	None
HP Drop Zones	Simulated drops/recovery zone	Target	No	300 yd. radius
Pole Site	EW test site	Test	No	None
Potts Peak	EW test site	Test	No	None
No Name Site 1 (NNS1)	EW test site	Test	No	None
No Name Site 2 (NNS2)	EW test site	Test	No	None

Name	Description	Target/Test Area	HE Use	Buffer
NATO	EW test complex (includes Collimation Tower)	Test	No	None
Bunker Site	EW test site	Test	No	None
Bunkers Radar Site	EW test site	Test	No	None
TACAN	EW test complex (includes ROTR 6)	Test	No	None

*Historical targets at Charlie Airfield inadvertently not included in 2004 FEIS. Use of historical target areas not included in FEIS will require additional NEPA documentation.

Mojave B North Target and Test Areas

Name	Description	Target/Test Area	HE Use	Buffer
Wingate Airfield	Simulated airfield target	Target	Yes	200 m
Kim Site	Developed instrumentation test site	Test	No	None
Brown Mountain	Electronic warfare (EW) test site	Test	No	None
Convoy Complex	Weapon impact area	Target	No	200 m
HP Drop Zones	Simulated equipment drops	Test	No	200 m
Johnson Mine	Weapon impact area (target)	Target	Yes	200 m
John Site	EW test site	Test	No	None
Electronic Warfare Sites	Distributed EW test sites throughout South Range, including hilltops, roads, and sites used by mobile assets	Test	No	None
Layton Pass	EW test site	Test	No	None
Slate Range	EW Test Site	Test	No	None
Straw Peak	EW Test Site	Test	No	None

Mojave B South Target and Test Areas

Name	Description	Target/Test Area	HE Use	Buffer
Air Force A/B/C	Historical open burn/open detonation (OB/OD) site and impact areas	Target	No	None
Superior Valley	Target and Training Complex	Target	Yes	200 m
Pyramid Peak	EW test site	Test	No	None
PHOTO Target	Weapon impact area	Target	No	200 m
Electronic Warfare Sites	Distributed EW test sites throughout South Range, including hilltops, roads, and sites	Test	No	None

Ordnance T&E and Propulsion Lab Area

Test Area	Test Area Description	HE Use	Net Explosive Weight (NEW) Limits	Buffer
Aero heat (T-Range)	Sea-level, air-breathing engine and aero thermal test facility	Yes	Energetic Material up to 249 lbs and 5,000 lbs Liquids up to 2,000 lbs Max of 100,000 lbs of thrust	None
CBAT M3 Test Bay	Contained burn test chamber	Yes	Solid Propellants up to 50,000 lbs	None
Coliseum (Warhead Test Arena)	Open detonation and warhead site	Yes	Energetic Material up to 10,000 lbs	200 m
CT-1*	Cook-off and detonation site	Yes	Energetic Material up to 2,000 lbs	315 ft
CT-3*	Contained burn test chamber	Yes	Energetic Material up to 200 lbs of Category 1.1 or 400 lbs of Category 1.3	None
CT-4*	Cook-off, bullet impact, fragment impact, and drop tower sites	Yes	Energetic Material up to 5,000 lbs	427 feet
CT-6	Gun, open detonation site, VERA	Yes	Energetic Material up to 3,000 lbs Liquid Propellants up to 10,500 lbs	427 feet
Small-Scale Cook-off Facility	Small-scale cook-off	Yes	5 lbs Category 1.1, 1.3, or 1.4	n/a
Detonation Mechanics - Outdoor Firing Bay	Energetic Testing	Yes	15 lbs Category 1.1, 1.3, or 1.4	100 ft
Test Bays I, II, IIA, III, VI, VII, Boondocks, and Launch Test Facility	Propulsion and launch test facilities	Yes	Energetic Material up to: ➢ 10,000 lbs at Bay II ➢ 11,000 lbs at Bay I ➢ 205,000 lbs at Bays IIA, III, VI,	None

Test Area	Test Area Description	HE Use	Net Explosive Weight (NEW) Limits	Buffer
(LTF)			VII, and Boondocks ➢ 500 lbs at LTF	
Guntub Bay	Small scale energetic testing site	Yes	3 lbs	236 feet
Outdoor Firing Bay B-12510	Small scale energetic testing site	Yes	15 lbs	404 feet
Test Bay IV	Hypergolic fueling/defueling facility	Yes	Energetic Material up to 18,000 lbs Liquids and Hypergolic up to 80,000 lbs	None
Test Bay VIII	Plume and propulsion test site	Yes	Energetic Material up to 10,000 lbs	None

*All NEW limits are for Explosives Category 1.1 with the exception of CT-3, Small-scale Cook-off Facility, and Detonation Mechanics - Indoor/Outdoor firing Bay. CT Sites are also permitted for consumption of various types of fuels.

Appendix C: RDAT&E and Training Operations at NAWSCL

RDAT&E/Training Operation	Description
Air-to-Air Operations	
Air-to-Air Weapons Tests	This scenario involves the test of an air-launched, air-intercept weapon against a variety of aerial targets. Air-to-air operations generally employ manned and/or unmanned aircraft, a kinetic or directed energy (DE) weapon system, a target, and countermeasure devices such as flares or chaff. Air-to-air testing assesses and evaluates weapons and weapon systems and the integration of weapon systems with the aircraft. Operations may include captive-carry inert, live motor but no warhead, or tactical all-up round for firing and warhead detonation. Examples of this scenario are the launch of an AIM-9X Sidewinder missile against a full-scale aerial target or the deployment of a high energy laser (HEL) weapon from a manned platform against an unmanned aerial target.
Aerial Target Launch	This scenario involves the launching of aerial targets to support test and training operations. The targets may include BQM-34/74, AQM-37, drones, unmanned aerial systems (UASs), towed banners, and other suitable devices. The targets may be launched from the ground or from aircraft.
Surface-to-Air Operations	
Surface-to-Air Weapons Tests	This scenario involves the test of a surface launched kinetic or DE weapon against a variety of aerial targets. Surface-to-air testing evaluates overall weapon system performance, warhead effectiveness, and software/hardware modifications or upgrades of ground-based weapon systems. Operations may include inert warhead or tactical all-up round for firing and warhead detonation. Targets used in surface-to-air testing include full-scale surface launched targets, air- or surface-launched subscale targets, unmanned systems, or helicopter targets.
Surface Target Launch	This scenario involves the test of a ground-launch weapon from a fixed launcher. Examples of this scenario are the launch of a 2.75” HYDRA-70 rocket from a stationary launch rail or the deployment of a HEL weapon against an airborne target.
Air-to-Ground Operations	
Air-to-Ground Weapons Tests	This scenario involves the test of an air-launched, ground attack weapons against a variety of ground based targets from manned and unmanned air vehicles. Air-to-surface testing assesses and evaluates weapon systems, the integration of air-to-surface weapons or weapon systems to the aircraft, warhead effectiveness, and weapon systems and/or aircraft software and hardware modifications or upgrades. Air-to-surface tests are heavily dependent on ground targets, which can include a wide variety of both vehicular and structural targets. They may include captive-carry inert, live motor but no warhead, or tactical all-up round for firing and warhead detonation. An example of this scenario is the launch of a GBU-130 Joint Direct Attack Munition (JDAM) against a fixed, structural target.

RDAT&E/Training Operation	Description
Mobile Land Targets	This scenario involves the testing and utilization of remote controlled and autonomous land targets such as M-60 tanks, tractor-trailers, pick-up sized trucks, and other moving vehicles. Tests may involve convoys, multiple targets moving at one time, targets moving at fast speeds, targets towed by motorized vehicles, or other configurations dictated by customer requirements. Any vehicle designed for on- or off-road use is a possibility as a mobile land target. Mobile land targets may also be used to support surface-to-surface test events.
Surface-to-Surface Operations	
Surface-to-Surface Weapons Tests	This scenario involves the test of a surface-launched, kinetic, or DE weapon against a surface target. Surface-to-surface testing evaluates the overall weapon system performance, warhead effectiveness, and software/hardware modifications or upgrades of ground-based weapons systems. Operations may include inert warhead or tactical all-up round for firing and warhead detonation. Targets used in surface-to-surface testing include both fixed and mobile. This scenario includes the testing of naval guns and other types of smaller caliber guns from fixed surface sites, ground vehicles, and air platforms. Examples of this scenario are the 5”/54 naval guns, ground-based DE systems, and shoulder fired weapons.
Gun Testing	This scenario involves the testing of naval guns and other types of smaller caliber guns from fixed surface sites, ground vehicles, and air platforms. Examples include the 5”/54 naval gun, 20mm cannon, close in weapons system (CWIS), and shoulder fired weapons. This scenario evaluates the overall weapon system performance, warhead effectiveness, and software/hardware modifications or upgrades of ground based weapon systems. Operations may include inert warhead or tactical all-up round for firing and warhead detonation. Targets used in gun testing include both fixed and mobile ground targets and various aerial targets.
Rail Gun	This scenario involves the test of an entirely electrical gun that accelerates a conductive projectile along a pair of metal rails using the same principles as the homopolar motor. Sliding or rolling contacts permit a large electric current to pass through the projectile. This current interacts with strong magnetic fields generated by the rails to accelerate the projectile toward the target. Rail gun testing could also be categorized under the electromagnetic operational category.
Surface Launched Weapon Testing	This scenario involves the test of a ground-launched weapon from a fixed launcher. An example of this scenario is either the launch of a 2.75” HYDRA-70 rocket from a stationary launch rail or the test firing of an MK 15 CIWS gun system.
Energetics/Ordnance Operations	
Energetics/Ordnance Tests	This scenario includes test, training, and disposal activities related to the use of energetic materials, such as propellants and explosives.

RDAT&E/Training Operation	Description
Aeroheat and Materials Evaluation	This scenario involves testing to evaluate the functionality and suitability of test articles under simulated aerothermal conditions at supersonic and hypersonic speeds. These tests are conducted at T-Range.
Air-Breathing Engine Tests	This scenario involves tests to evaluate the functionality and suitability of air-breathing propulsion systems at T-Range.
Bullet Impact	This scenario involves the firing of a bullet or other projectile at munitions, a fuel tank, or other structure to determine the system response resulting from bullet impact.
Combustion Characterization	This scenario involves the combustion of solid and liquid fuels, some with new and novel energetic propellant ingredients, to measure burning-rate characteristics, temperature sensitivity, the Arrhenius form of burning-rate law, and the stability behavior in terms of the Novozhilov parameters.
Counter-Improvised Explosive Device (CIED) Testing	This scenario involves the testing of CIED technologies and systems in scenarios and situations that are driven by theater requirements. CIED testing could also be categorized under the electromagnetics operational category.
Drop Tests	This scenario involves dropping a munitions or weapon system from a 40-foot height to a hard surface to determine if the article under test can withstand a drop without inadvertent ignition. These tests are conducted to ensure the articles can be safely shipped and can survive being dropped during transit.
Fast Cook-Off	This scenario involves exposing a munitions or weapon system to the quickly increasing and elevated temperatures experienced during a fully developed fire. These tests are performed to simulate the conditions that would be expected during an incident similar to the 1967 fire aboard the USS Forrestal (CV-59), in which a flight deck fire spread and caused munitions loaded on fully armed aircraft to explode and eventually engulf the entire flight deck. The incident resulted in 134 sailors killed and 167 injured.
Firefighting Agents and Technique Testing	This scenario involves tests to evaluate the effectiveness of various fire suppression agents, systems, and techniques in a simulated flight deck environment. These operations are conducted at the Fire Science Test Facility (i.e., Mini-Deck).
Fuel Air Explosive	This scenario involves the testing of an explosive weapon that produces a blast wave of a significantly longer duration than those produced by condensed explosives. This is useful in military applications where its longer duration increases the numbers of casualties and causes more damage to structures. These thermobaric explosive devices rely on oxygen from the surrounding air, whereas most conventional explosives consist of a fuel-oxygen premix (for instance, gunpowder contains 15% fuel and 75% oxidizer). Thus, on a weight-for-weight basis, they are significantly more powerful than normal condensed explosives. Their reliance on atmospheric oxygen makes them unsuitable for use underwater or in adverse weather, but they have significant advantages when deployed inside confined environments such as tunnels, caves, and bunkers.

RDAT&E/Training Operation	Description
Fuel Fire	This scenario involves the intentional ignition and sustained burning of fuel-fed fires for testing fire fighting systems, fire detection systems, or other fire control related systems.
Fuse Testing	This scenario involves the testing of fuses and safety-arming devices for a broad range of weapons, such as guided missiles, bombs, rockets, and other types of ordnance. Fuse types may range from simple mechanical devices to more sophisticated ignition devices incorporating mechanical and/or electronic components used in a proximity fuse for a missile or a M107 artillery shell, magnetic/acoustic fuse on a sea mine, spring-loaded grenade fuse, pencil detonator, or anti-handling devices. Safety and arming devices are tested to ensure they prevent inadvertent arming of the weapons during shipping and handling.
Isotopic Labeling of Energetic Materials	This scenario involves the labeling of energetic materials to emit isotopes that are not within the Department of Energy (DOE) isotope production and distribution program. Examples may include C12 or C14, which are used to isotopically carbon date fossils. These tests may occur at any open-air detonation facility.
Large- and Small-scale Detonation	This scenario involves the open-air detonation of energetic materials to support a broad range of test and training objectives.
Liquid Gun Propellant	This scenario involves the testing of guns that use liquid propellant in place of traditional gunpowder. Two types of liquid propellant guns, the bulk loaded and the direct injected regenerative liquid propellant gun (RLPG), are typically used to evaluate liquid gun propellants. The bulk loaded liquid propellant gun has a chamber behind the projectile that is filled completely with liquid propellant. In the direct injected RLPG, the propellant is pumped through orifices in a differential area piston during the combustion cycle so that the rate at which the propellant is injected into the combustion chamber is controlled.
Open-Air Detonation	This scenario involves methods to dispose of unwanted explosives and munitions and allows for the environmentally safe disposal of unexploded ordnance. Tests simulate the combustion/explosion from their initiation in the facility until the plumes have escaped the facility and begin interacting with nearby environmental, terrain, and cultural features.
Open Burn/Open Detonation	This scenario involves the treatment/disposal of explosive hazardous waste. The waste consists of energetic waste generated from research and development (R&D) laboratory activities as well as munitions waste (both nonstandard items that are no longer useful to research, development, acquisition, test and evaluation [RDAT&E] purposes and standard items that are expired, in excess, or unsafe). Operations are performed at a permitted facility in Burro Canyon. The facility allows for the disposal of sizeable quantities of potentially energetic wastes that cannot be safely transported off range and must be treated on- site.
Propulsion Testing	This scenario involves testing of rocket motors for standard size tactical missiles and large strategic missiles.

RDAT&E/Training Operation	Description
Shape-charge Jet	This scenario involves testing explosive charges that are shaped to focus the effect of the explosive's energy. Shaped charges are frequently used as warheads in anti-tank missiles, gun-fired projectiles, rifle grenades, mines, bomblets, torpedoes, and various types of air/land/sea-launched guided missiles.
Slow Cook-Off	This scenario involves exposing a munitions or weapon system to slowly increasing temperatures to determine if it inadvertently explodes or otherwise malfunctions. These tests are performed to simulate the conditions that would be expected when exposed to a low-level fire on the flight deck of a carrier, in a magazine storage area, or any locations where the munitions or weapon system is exposed to low-level fire over a period of time.
Surface and Static Weapons Tests	This scenario involves the evaluation of overall weapon system performance, warhead effectiveness, and software/hardware modifications or upgrades of ground based weapon systems. It also includes fuse and munitions development and lot acceptance testing. Operations may include inert warhead or tactical all-up round for firing and warhead detonation.
Sympathetic Detonation	This scenario involves the intentional detonation of one munition stored in close proximity to another munition to determine if the intentional detonation triggers a secondary explosion in the other munition.
Warhead Testing	This scenario involves warhead performance tests for lethality. Tests analyze fragment and blast kill mode capacities. Warhead delivery vehicles include bombs, missiles, and rockets.
Electromagnetics Operations	
Electromagnetic Tests	This scenario involves ground and flight tests that radiate radio frequency (RF) energy across much of the electromagnetic spectrum.
Antennae Pattern Measurement	This scenario involves the testing of a broad range of antennae to ensure the antenna meets specifications, or simply to characterize antenna performance parameters such as gain, radiation pattern, beam width, polarization, and impedance.
Communications Testing	This scenario involves flight and ground test of clear/secure internal and external voice communications and components that provide for the transmission and receipt of digital data required by information warfare systems. System components include radios, data links, intercoms, AJ/LPI Appliqués, antennae, data modems, and COMSEC equipment.
Counter-Improvised Explosive Device (CIED) Testing	This scenario involves the testing of CIED technologies and systems in scenarios and situations that are driven by theater requirements. CIED testing could also be categorized under the energetics operational category.

RDAT&E/Training Operation	Description
Countermeasures	This scenario involves aircraft and ground based testing in a simulated threat environment to evaluate the effectiveness of electronic countermeasures (ECM) equipment, such as chaff, flares, towed and launched infrared (IR)/RF decoys, jammers, self-defense systems, and other systems designed to counter electronic threats. These tests may involve the transmission of high power RF energy and/or the release of chaff, IR decoy flares, RF decoys, obscurants, or similar non-explosive stores.
Directed Energy Testing (HEL and HPM)	This scenario involves the test of: • HEL weapons designed for area defense, aircraft self-protection, strategic and tactical missile defense, and precision strike. Systems may be integrated onto land, aircraft, and ship platforms. Ship power systems have the capacity to extend their range and lethality. • High-power microwave (HPM) weapons designed to provide both anti-electronic and non-lethal anti-personnel capabilities. Systems may be integrated onto land, aircraft, and ship platforms. Ship power systems have the capacity to extend both range and lethality of HPM weapons.
Electromagnetic Environmental Effects (E^3) Tests	This scenario tests the impact of the electromagnetic environment on the operational capability of military forces, equipment, systems, and platforms. It encompasses all electromagnetic disciplines, including electromagnetic capability and electromagnetic interference; electromagnetic vulnerability; electromagnetic pulse; electro-static discharge; hazards of electromagnetic radiation to personnel, ordnance, and volatile materials; and natural phenomena effects of lightning and precipitation static.
Electronic Warfare (EW)	This scenario involves aircraft- and ground-based systems operations to develop defensive and offensive tactics against enemy weapon systems. These tests require an extensive array of realistic threat replication or simulation devices to ensure realistic results. These tests may involve the transmission of high power RF energy and/or the release of chaff, IR decoy flares, RF decoys, or similar non-explosive stores.
Experimental Electromagnetics	This scenario involves the testing of a broad range of electromagnetic systems. Tests include radar cross-section (RCS) measurement, global positioning system (GPS) anti-jam test, and general electromagnetic testing. The majority of the tests are conducted at Junction Ranch, but other range areas may be utilized to support this type of testing.
Laser Testing	This scenario involves the use of lasers for a broad range of applications such as target designation and ranging, defensive countermeasures, communications, and DE weapons.
Radar Cross-Section (RCS)	This scenario involves tests to document the vulnerability of weapons systems to detection, jamming, HPM, and directed energy systems. Testing of aircraft, aircraft models and components, missiles, reentry vehicles, ground vehicles, very low observable (VLO) articles, ship models, plumes, and antennae are typical of these scenarios.

RDAT&E/Training Operation	Description
Sensor Testing	This scenario involves flight and ground tests to design, develop, and integrate the broad range of sensors used in aircraft and other weapons systems. They include acoustic, RF, explosive ordnance (EO), chemical, and other types of sensors that use current and emerging technologies.
Signature Measurement Testing	This scenario involves the use of actual system hardware or physical models to measure signal data such as RF, RCS, synthetic aperture radar, ground moving target indicators, electro-optical, infrared, ultraviolet, visible, laser, acoustic, seismic, magnetic, exhaust plume characteristics, as well as electromagnetic emanations.
Track Test Operations	
Track Tests	This scenario involves the test of a kinetic or DE weapon system mounted on a sled capable of operating at speeds ranging from subsonic to hypersonic.
Captive Flight Tests	This scenario involves the test of a weapon system mounted on a sled to simulate flight conditions. A test article, often a full-scale aircraft or weapon system, is propelled down track to simulate flight conditions. These flight conditions can cover a velocity much lower than seen in other Supersonic Naval Ordnance Research Track (SNORT) testing, such as terminal effects testing.
Ejection Seat Tests	This scenario involves the test of an ejection seat from a cockpit section mounted on a rocket-propelled sled. This includes the down-range movement of the sled, coupled with a secondary, vertical launch of the ejection seat. The sled velocities are typically subsonic.
Terminal Effects Tests	This scenario involves the test of a weapon system for target penetration capabilities against a fixed target, often a concrete block, mounted down-range of the muzzle section of the SNORT track. The weapon is separated from a propelled sled, which is retarded via a water brake immediately prior to the muzzle. The weapon is allowed to transit down-range to impact without the sled.
Fleet Training Operations	
Air Combat Training	This scenario involves aircrew training in the art of maneuvering a combat aircraft to attain a position from which an attack can be made on another aircraft. It relies on offensive and defensive basic fighter maneuvering to gain an advantage over an aerial opponent. The use of dissimilar aircraft in the program furthers the learning process.
Aircrew Training	This scenario includes aircrew proficiency training, functional check flights, and tactical training of Fleet squadrons, to include static and moving targets.

RDAT&E/Training Operation	Description
Combat Skills Training	This scenario involves training to prepare explosive ordnance disposal (EOD) technicians for the combat environment, including mine resistant ambush protected (MRAP) driving, crew-served weapons proficiency, urban environment training, and enemy ordnance safety procedures. Combat skills training is conducted at the Naval Expeditionary Combat Command Complex located in Darwin Wash.
Ground Troop Training (GTT)	This scenario involves theater-relevant combat training of ground troops with emphasis on Special Forces, EOD, expeditionary force, construction battalion (Seabees), forward deployed air controller, and reconnaissance. Examples include, but are not limited, to Force Reconnaissance, Insertion and Extraction, Close Air Support (CAS), Fleet Area Control and Surveillance, Open Burn/Open Detonation, Mine Clearance, and other types of tactical exercises. GTT operations may involve support aircraft (manned or unmanned, fixed or rotary wing), small- and large-caliber weapons firing, and the use of military support animals and surface vehicles.

Appendix D: Range Use Areas

Range Use Area	Description
North Range	
Airport Lake Range	Occupies approximately 57 square miles in the central portion of the North Range. The Range is a large playa surrounded on three sides by hills and mountains. Contains the G-4 test track.
Armitage Airfield	Occupies approximately 13 square miles in the southern portion of the North Range, northwest of Mainsite. Contains three major runways, facilities for aircraft maintenance, hangars, ordnance handling and storage, ground support equipment, and the Range Control Center.
Baker Range	Located in the southwestern portion of the North Range. Contains the B-4 vehicle barrier track.
Cactus Flats Range	Occupies approximately 1,157 acres in the northwestern portion of the North Range. It is located at an approximate elevation of 5,100 feet.
Charlie Range	Located in the southwestern portion of the North Range.
Coles Flat Range	Located in the north central portion of the North Range.
Coso North Range	Occupies approximately 70 square miles in the northwestern corner of the North Range. Represents a typical wilderness-type combat environment characterized by rough, mountainous terrain covered with piñon pine, juniper tree, and brush. The Range is located on a broad mountainous plateau.
Coso South Range	Located directly below the Coso North Range. Represents a typical wilderness-type combat environment characterized by rough, mountainous terrain covered with piñon pine, juniper tree, and brush. The Range is located on a broad mountainous plateau.
Coso Geothermal	Occupies approximately 26 square miles and is located to the southwest of the Coso South Range.
Darwin Wash	Located at an elevation of 4,500 feet in the northeastern corner of the North Range. Contains a major portion of the Naval Expeditionary Combat Command Training Complex used for combat training of explosives ordnance disposal technicians and other operational forces as well as the Joint Counter-Improvised Explosive Device Facility (JCIF).
George Range	Occupies approximately 305 square miles in the eastern portion of the North Range, in the northeastern portion of the Indian Wells Valley. The Argus Mountains to the east and Coso Mountains to the north act as natural buffers for safety and security and ideal vantage points for test instrumentation. Contains the Weapons Survivability Complex and the Burro Canyon Open Burn/Open Detonation Facility.

Range Use Area	Description
Junction Ranch	Occupies approximately 65 square miles in the northeastern part of the North Range known as Etcharren Valley. Surrounding terrain limits visual line of sight into the area, minimizing security and electro-magnetic interference concerns. Contains the Radar Cross-Section (RCS) Range.
Mainsite	Occupies approximately 8 square miles in the southern portion of the North Range. Contains Station headquarters, principal laboratories, the Fire Science Test Facility, and most administrative and support functions and is the largest developed area on-Station.
Main Magazines	Occupies approximately 5 square miles in the southeastern portion of the North Range. Composed of ordnance storage, administrative facilities, and safety areas.
Ordnance Test and Evaluation	Occupies 90 square miles in the southeastern corner of the North Range. Contains facilities for safety (i.e., insensitive munitions), propulsion, and warhead testing.
Propulsion Laboratories	Occupies approximately 15 square miles in the southeast corner of the North Range. The complex consists of two discrete areas, the China Lake Propulsion Laboratory and the Salt Wells Propulsion Laboratory, each with more than 100 buildings and test facilities dedicated to propellant and explosives testing. The Salt Wells Propulsion Laboratory is also China Lake's primary ordnance processing/manufacturing area.
Supersonic Naval Ordnance Research Track (SNORT)	Located in the southwestern corner of the North Range. Heavily instrumented facility with multiple high-speed tracks and several special purpose areas.
South Range	
Mojave B North Range	Occupies approximately 238 square miles in the northern portion of the South Range. The Range has two valley floors, one with a south-north orientation and the other east-west. High mountains surround each valley. Contains Wingate Airfield.
Mojave B South Range	Occupies approximately 180 square miles in the southern portion of the South Range.
Randsburg Wash Range	Occupies approximately 282 square miles in the central portion of the South Range. Contains Charlie Airfield and the Electronic Combat Range (ECR). ECR is on the level floor of an isolated 15-mile-long valley, bordered by mountains to the north and south.
Superior Valley	Occupies approximately 74 square miles within Mojave B South.

Appendix E: Special Purpose Ranges and Facilities

Special Purpose Range/Facility	Description
Vehicle Barrier Track (B-4)	The Vehicle Barrier Track is a 100-foot long section of rail secured onto a flat concrete pad available for testing motorized vehicles against anti-terrorist barricades. Tests typically involve propelling specially adapted vehicles into barricades at the end of the track.
Supersonic Naval Ordnance Research Track (SNORT)	The SNORT is a 4.1-mile heavy-duty dual rail track capable of propelling monorail or test vehicles at hypersonic speeds. Test vehicles weighing up to 136,000 pounds have been tested on the track. Trackside facilities include a simulated rain field for erosion testing and a series of poles/towers for suspension of test instrumentation above the rails. The SNORT mission is to serve government and industry by providing a high-speed testing capability that allows customer systems to be tested and evaluated under reliable and controlled dynamic conditions. Typical tests conducted at the facilities include complex multiple target penetration using live high explosive (HE) filled warheads, live fuses, or both; aircrew ejection systems; bombs, including live HE fill; missiles; rockets; guidance and fusing (live, inert, recorder) systems; free-flight terminal ballistics; environmental; soft recovery; electronic warfare and countermeasures; vehicle and barrier testing; and movie production special effects.
G-4 Track	The G-4 Track is located 16 miles north of SNORT. G-4 overlooks Airport Lake and is a 3,000-foot long, precisely aligned, heavy-duty dual rail track. It has a narrower gage rail spacing than SNORT, but is capable of propelling monorail or dual rail test vehicles with similar speed and weight limits. The muzzle overlooks a wide, deep valley, which facilitates ballistic launch trajectories several hundred feet above impact point. Arrestor gear is available for sled recovery, although most tests involve launch of the test item. A portable velocity measurement system is used at this track.
Ground Electronic Warfare Facilities I and II	Located within Darwin Wash and Mojave B South, respectively, the Ground Electronic Warfare Facilities conduct the test and evaluation (T&E) of counter-improvised explosive device (CIED) technologies and systems, and they emulate theater-relevant threats to provide necessary data in response to theater requirements.
Naval Expeditionary Combat Command (NECC) Training Complex	The NECC Training Complex brings explosive ordnance disposal (EOD), Naval Coastal Warfare, Navy Expeditionary Logistics Support functions, and Seabees together. NECC integrates all warfighting requirements for expeditionary combat and combat support elements. This transformation allows for standardized training, manning, and equipping of sailors who will participate in the global war on terrorism as part of the joint force. It also results in more capable, responsive, and effective expeditionary sailors.

Special Purpose Range/Facility	Description
Junction Ranch	Junction Ranch is an isolated outdoor test facility for radar cross-section (RCS) testing of ground, air, and sea-based vehicles; test articles; and components. RCS and radar signature testing are the range's principal missions, along with other dust suppression, acoustics and infrared (IR) testing, directed energy (DE), radio frequency (RF) communications, RF phenomenology, and coherent antenna measurements. The facility maintains and operates a mobile radar system that is available for RCS measurements wherever required. Junction Ranch supports local users, Naval Air Warfare Center Weapons Division (NAWCWD), Navy, Air Force, Army, Department of Defense (DoD) agencies, contractors, the aerospace industry, and academics.
Ordnance T&E Ranges/Facilities	Ordnance T&E ranges contain several test sites for static testing of solid propulsion rocket motors and arena testing of HE warhead and other explosive devices. Propulsion tests are conducted within the following sites, including Bay I, Bay II, Bay IIA, Bay III, Bay IV, Bay VI, Bay VII, Bay VIII, Boondocks, and Launch Test Facility (LTF). These areas are collectively known as Sky Top. Bay VI is the vertical large solid rocket motor firing area and Bay VII is the horizontal large solid rocket motor firing area. The unit also contains facilities for evaluating the reaction of weapons to various military hazards, such as aircraft fuel fires, bullet impacts, and drops (accidental displacement during transport). Facilities are available for testing the reaction of weapons to such various environmental factors as temperature, humidity, vibration, and salt spray.
Propulsion Laboratories	The China Lake Propulsion Laboratory (CLPL) and the Salt Wells Propulsion Laboratory (SWPL) each contain more than 100 buildings and test facilities dedicated to research, development, acquisition, test and evaluation (RDAT&E) of propellants and explosives. The SWPL is China Lake's primary ordnance processing/manufacturing area. The CLPL has a permanent clearance of up to 2,500 feet above ground level for testing.
Weapons Survivability Laboratory (WSL)	The WSL and its surrounding safety zone encompasses eight square miles in a remote, secure area of the North Range. The facility conducts survivability and vulnerability testing to provide empirical data on the vulnerability of aircraft to actual threats. The primary mission is live-fire T&E of Navy aircraft to prove that the components and/or entire aircraft is survivable prior to Fleet production. WSL has five fully instrumented concrete test pads with tie down rails and control rooms. Test activities conducted include structural response to ballistic impacts, fire-detection and fire-extinguishing systems, warhead detonations against airframes or running engines, thermal and structural tests, IR signature tests, static and simulated in-flight crew ejections, hostile firing tests, and aerodynamic studies for flutter, fusing, aircraft stores separation, and parachute systems
Burro Canyon Open Burn/Open Detonation Facility	The Burro Canyon Open Burn/Open Detonation Facility consists of approximately 15 acres of disturbed land in mountainous terrain of the North Range. Open detonation is the preferred method of hazardous waste treatment and is conducted directly on the ground surface. Open burns are conducted in an elevated burn pan.

Special Purpose Range/Facility	Description
Electronic Combat Range (ECR)	The ECR is the primary Navy range for all types of airborne electronic combat testing. The mission of the ECR is to provide, maintain, and continuously improve an open-space test range and laboratory for engineering, testing, analysis, and training. The ECR includes sea and land threat system sites, instrumentation, an operations center, and support facilities. The range has also developed an operating area to be used for unmanned aerial system (UAS) flight testing. This area enables users to test UAS in an electronic threat environment without the need to fly outside of R-2524.
Fire Science Test Facility (Mini-Deck)	The Fire Science Test Facility is located in the Northeast corner of the main magazines in George Range. The facility simulates a flight deck fire environment and provides for the testing of new firefighting agents and firefighting techniques. Permits allow burning up to 240,000 gallons of JP-8 per year.

Appendix F: Classes of Lasers

Laser	Class Description	Energy Emitted	Safety Issues	Examples
Class 1*	Low powered devices considered safe from all potential hazards	N/A	No injury, regardless of exposure time, to eyes or skin. No safety measures necessary.	Laser printers, toys, compact disc (CD) players, CD read-only memory (ROM) devices, laboratory analytical equipment
Class 2*	Low power, visible light lasers that could possibly cause damage to a person's eyes	< 1 milliwatt (mW)	Usually safe. Eye protection normally afforded by the aversion response (turning away from a bright light source or closing or blinking eyes). If directly viewed for long periods of time with no blinking, damage to eyes could result.	Pointers used in presentations, toys, range finding equipment, aiming devices
Class 3**	Medium Power	< 500 mW	May be hazardous to eyes under direct and specular reflection (almost perfect reflection such as a mirror) viewing conditions, but is normally not hazardous.	Laser scanners, military hand-held laser rangefinders, entertainment light shows, target illuminators
Class 4	High Power	> 500 mW	Direct beam or specular reflection is hazardous to eyes and skin. May pose a diffuse reflection hazard (reflected off an imperfect reflective surface) or fire hazard. May produce air pollutants.	Medical surgery, research, drilling, cutting, welding, aircraft target designator used for guided weapons, military laser weapons

* Class 1M and 2M categories also exist, which have the same parameters as above, except that direct viewing with an optical instrument such as a telescope could be potentially hazardous.

**Two subcategories exist under Class 3: Class 3R lasers are potentially hazardous if the eye is appropriately focused and stable, but probability of injury is low; energy emitted is < 5 mW. Class 3B may be hazardous under direct and specular reflection viewing conditions; energy emitted is < 500 mW.

Appendix G: Acronyms and Abbreviations

ANSI	American National Standards Institute
ATV	All Terrain Vehicle
BIP	Blow in Place
BLM	Bureau of Land Management
CAS	Close Air Support
CD	Compact Disc
CIED	Counter-improvised Explosive Device
CLPL	China Lake Propulsion Laboratory
CO_2	Carbon Dioxide
COIL	Closed-cycle Chemical Oxygen Iodine Laser
CONEX	Container Express
CWIS	Close in Weapons System
DE	Directed Energy
DoD	Department of Defense
ECR	Electronic Combat Range
EIS	Environmental Impact Statement
EM	Electromagnetic
EO	Electro-optical
EOD	Explosive Ordnance Disposal
EODTEU-1	Explosive Ordnance Disposal Training and Evaluation Unit One
EW	Electronic Warfare
FEIS	Final Environmental Impact Statement
GHz	Gigahertz
GPS	Global Positioning System
GTT	Ground Troop Training
HE	High Explosive
HEL	High Energy Laser
HMMWV	High Mobility Multipurpose Wheeled Vehicle
HPM	High-power Microwave
IED	Improvised Explosive Device
IEEE	Institute of Electrical and Electronics Engineers
IR	Infrared
ISR	Intelligence, Surveillance, and Reconnaissance
JCIF	Joint Counter- Improvised Explosive Device Facility
JDAM	Joint Direct Attack Munition
KIAS	Knots Indicated Air Speed
KTM	Kineto Tracking Mount
LEIS	Legislative Environmental Impact Statement
LTF	Launch Test Facility
MIL-STD	Military Standard
MRAP	Mine Resistant Ambush Protected
NAVAIR	Naval Air Systems Command
NAWCWD	Naval Air Warfare Center Weapons Division

NAWSCL	Naval Air Weapons Station China Lake
NECC	Naval Expeditionary Combat Command
NEPA	National Environmental Policy Act
NEW	Net Explosive Weight
OB/OD	Open Burn/Open Detonation
PGM	Precision Guided Munitions
R&D	Research and Development
RC	Remote Controlled
RCMP	Range Complex Management Plan
RCS	Radar Cross-section
RDAT&E	Research, Development, Acquisition, Test and Evaluation
RF	Radio Frequency
RLPG	Regenerative Liquid Propellant Gun
ROM	Read-only Memory
SAM	Surface-to-Air Missile
SF_6	Sulfur Hexafluoride
SME	Subject Matte Expert
SNORT	Supersonic Naval Ordnance Research Track
SWPL	Salt Wells Propulsion Laboratory
T&E	Test and Evaluation
UAS	Unmanned Aerial System
UGS	Unmanned Ground System
VLO	Very Low Observable
VSTOL	Vertical/Short Takeoff and Landing
WSL	Weapons Survivability Laboratory

APPENDIX C

DRAFT COMPREHENSIVE LAND USE MANAGEMENT PLAN (CLUMP)

Comprehensive Land Use Management Plan (CLUMP)

Naval Air Weapons Station China Lake

November 2014

Endorsing Officials

Mr. James G. Kenna	CAPT Richard Wiley, USN
State Director	Commanding Officer
Bureau of Land Management	NAWS China Lake

Table of Contents

EXECUTIVE SUMMARY 1
1.0 INTRODUCTION 1-1
1.1 Background 1-1
1.2 Purpose and Need 1-1
1.3 Goals 1-2
1.4 Mission Summary 1-2
1.5 Policies 1-3
1.6 Key Management Initiatives 1-4
1.7 Expected Outcomes 1-5
1.8 Planning Assumptions 1-6
1.9 Development Approach 1-6
1.10 Relationship to Other NAWSCL Management Plans and Initiatives 1-7
1.11 Relationship to Regional Management Plans and Initiatives 1-8
2.0 LAND USE AND ENVIRONMENTAL RESOURCES 2-1
2.1 Regional Setting 2-1
2.2 China Lake Lands 2-4
2.3 Mission-Related Activities 2-10
2.4 Nonmilitary Land Use 2-21
2.5 Native American Access 2-23
2.6 Environmental Resources 2-23
3.0 LAND USE MANAGEMENT 3-1
3.1 Management Strategy 3-1
3.2 Land Management Framework 3-2
3.3 Land Use Management Objectives and Planned Actions 3-6
4.0 LAND USE ADMINISTRATION AND IMPLEMENTATION 4-1
4.1 Land Use Management 4-1
4.2 Land Management Factors 4-1
4.3 Project Review and Environmental Approval Process 4-4
5.0 REFERENCES 5-1

Tables

Table 1-1. NAWSCL Organizations, Functions, and Missions....1-3
Table 2-1. Bureau of Land Management Wilderness Areas Near NAWSCL....2-4
Table 2-2. Lands Acquired by Lease, Easement, or Permit for Navy Use....2-7
Table 2-3 Land Management Units....2-13

Figures

Figure 1-1 Clump Development Process....1-7
Figure 2-1 Regional Vicinity Map....2-2
Figure 2-2 Topography, North Range....2-5
Figure 2-3 Topography, South Range....2-6
Figure 2-4 On-Installation Land Ownership, North Range....2-8
Figure 2-5 On-Installation Land Ownership, South Range....2-9
Figure 2-6 Land Management Units, North Range....2-11
Figure 2-7 Land Management Units, South Range....2-12
Figure 2-8 Historic Concentrated Ordnance Use Areas, North Range....2-19
Figure 2-9 Historic Concentrated Ordnance Use Areas, South Range....2-20
Figure 3-1 Land Uses, North Range....3-3
Figure 3-2 Land Uses, South Range....3-4
Figure 3-3 Listed Species Habitats, North Range....3-7
Figure 3-4 Listed Species Habitats, South Range....3-8
Figure 3-5 Known Districts and Surveys, North Range....3-9
Figure 3-6 Known Districts and Surveys, South Range....3-10
Figure 4-1 Environmental Review Process Flowchart....4-7

Appendices

A. California Desert Protection Act, Section 8, Military Overflight and Land Withdrawal Act, 1994

B. Department of Interior/Department of Navy, Memorandum of Agreement Regarding Land Management Authority, 1996

C. Memorandum of Agreement Between Commander, Navy Region Southwest, and Naval Air Warfare Center Division, 2010

D. NAWSCL Target and Test Areas, from NAWCWD Operational Requirements Document, 2013

E. Naval Air Weapons Station China Lake Range Access Policy, 2003

F. NAWS Environmental Review Process (ERP) Instruction 5090.6, 2013

This page intentionally left blank.

ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
AFB	Air Force Base
AFY	acre-feet per year
AICUZ	Air Installation Compatible Use Zone
AMP	Airfield Master Plan
AMSL	above mean sea level
AOP	Activity Overview Plan
APZ	Accident Potential Zones
BASH	Bird/ Aircraft Strike Hazard
BLM	Bureau of Land Management
BO	Biological Opinion
CATEX	Categorical Exclusion
CDCAP	California Desert Conservation Area Plan
CDPA	California Desert Protection Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIED	counter improvised explosive device
CLUMP	Comprehensive Land Use Management Plan
CNIC	Commander, Navy Installations Command
CNRSW	Commander, Navy Region Southwest
CO	Commanding Officer
DE	directed energy
DoD	Department of Defense
DoI	Department of the Interior
DoN	Department of the Navy
DRECP	Desert Renewable Energy Conservation Plan
EA	Environmental Assessment
EC	Environmental Coordinator
ECR	Electronic Combat Range
EIS	Environmental Impact Statement
EM	electromagnetic
EMD	Environmental Management Division
EMT	Encroachment Management Team
EOD	Explosive Ordnance Disposal
EPD	Environmental Program Director
ERP	Environmental Review Process
ESQD	explosive safety quantity distance
ET	evapotranspiration
EW	electronic warfare
FLPMA	Federal Land Policy and Management Act
FONSI	Finding of No Significant Impact
FUDS	Formerly Used Defense Site
GIS	geographic information system
GPS	global positioning system
GTT	ground troop training
HE	high explosive
HEL	high-energy laser
HPM	high-powered microwave

ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
IRP	Installation Restoration Program
Installation	Naval Air Weapons Station China Lake
IWV	Indian Wells Valley
JCIF	Joint Counter-Improvised Explosive Device Facility
KGRA	Known Geothermal Resource Area
LEIS	Legislative Environmental Impact Statement
LMU	land management unit
LUCIP	Land Use Control Implementation Plan
MCAAS	Marine Corps Auxiliary Air Station
MFR	Memorandum for Record
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPPEH	material potentially presenting an explosive hazard
MU3	Navy EOD Mobile Unit 3
NASA	National Aeronautics and Space Administration
National Register	National Register of Historic Places
NAVAIR	Naval Air Systems Command
VAVFAC	Naval Facilities
NAWCWD	Naval Air Warfare Center Weapons Division
NAWSCL	Naval Air Weapons Station China Lake
NAWSINST	NAWSCL Instruction
NCP	National Contingency Plan
NCTC	Naval Construction Training Center
NEPA	National Environmental Policy Act
NEW	net explosive weight
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NPS	National Park Service
OERB	Operation Engineering Review Board
OHV	off-highway vehicle
OPNAVINST	Chief of Naval Operations Instruction
PD	project description
PMFR	Programmatic Memorandum for Record
PPA	power purchase agreement
PRB	Project Review Board
PWD	Public Works Department
R&D	research and development
RCS	radar cross-section
RDAT&E	research, development, acquisition, test, and evaluation
RF	radio frequency
RMP	Range Management Plan
ROD	Record of Decision
RSMIS/GIS	Regional Shore Information Management System/Geographic Information System
SARA	Superfund Amendment and Reauthorization Act
Seabee	U.S. Navy Construction Battalion
SHPO	State Historic Preservation Officer
SMFR	Standard Memorandum for Record
SMP	Site Management Plan

SNORT	Supersonic Naval Ordnance Research Track
SOP	standard operating procedure
T&E	test and evaluation
TCP	Traditional Cultural Property
TEUONE	Navy EOD Training and Evaluation Unit 1
UAS	unmanned aerial system
UGS	unmanned ground system
USACE	United States Army Corps of Engineers
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
UXO	unexploded ordnance
ybp	years before present

This page intentionally left blank.

EXECUTIVE SUMMARY

The California Desert Protection Act (CDPA) of 1994 (Public Law 103-433) reauthorized the Navy's continued use of public withdrawn lands at the Naval Air Weapons Station at China Lake (NAWSCL) until 2014 or until the next reauthorization legislation. This Act required the development of a land use management plan for these withdrawn lands in accordance with the Federal Land Policy and Management Act (FLPMA) of 1976 (Public Law 94-579). Under the provisions of the CDPA and through a Memorandum of Agreement between the Navy and the Department of the Interior (DoI) through the Bureau of Land Management (BLM), management responsibility of these withdrawn lands was assigned to the Navy in March 1996.

The Navy, in partnership with BLM and through a rigorous public review process, developed and endorsed a Comprehensive Land Use Management Plan (CLUMP) in May 2005. The CLUMP was designed to support the current and long-term military mission and continue environmental compliance and stewardship programs at NAWSCL.

In accordance with the provisions of the 1994 CDPA, a Legislative Environmental Impact Statement (LEIS) was prepared by Navy and BLM to support the application for renewal of the grant to the Navy for the continued use of the federally withdrawn lands at NAWSCL. An element of the Proposed Action of the LEIS is the updating and implementation of a revised CLUMP. The CLUMP Update will include refinements and adjustments to the policies, goals, objectives and procedures as determined by Navy operational, facility and environmental compliance and conservation requirements, as well applicable inputs from BLM, other resource agencies and the public.

When finalized and endorsed by Navy and BLM signatories, this CLUMP Update will supersede the 2005 CLUMP and, except insofar as it may itself subsequently be updated, will serve as the Navy's land management framework at NAWSCL until 2039 or until the next legislative reauthorization, in partnership with BLM and the public.

As in the 2005 CLUMP, this Update contains land use goals, objectives, planned actions, and procedures for the management of land use associated with the support of military operations and the protection and conservation of environmental resources at NAWSCL. It provides a working tool to accommodate changes and updates to meet the current and future land use management needs. The CLUMP Update revises baseline conditions for environmental resources and land use in accordance with the current knowledge of those conditions and other applicable management plans at NAWSCL. These applicable plans include the 2014 Integrated Natural Resources Management Plan (INRMP); the 2012 Integrated Cultural Resources Management Plan (ICRMP) and Programmatic Agreement (see Appendix K of the Final EIS/LEIS); the 2011 Air Installation Compatible Use Zone (AICUZ) Update; the NAWSCL Airfield Master Plan (AMP); the 2013 Naval Air Systems Command (NAVAIR) Operational Requirements Document; and other technical directives. The CLUMP integrates environmental resource management, operations planning, facilities planning, and an environmental review process to support land use decision-making. The CLUMP is intended to make the management of land use and environmental resources a more effective and efficient process.

The CLUMP Update contains four chapters. Chapter 1 provides a general overview of the effort including a description of the purpose and need for the plan, and the Navy's research, development, acquisition, test, and evaluation (RDAT&E) mission at China Lake, land management goals and policies, key management initiatives, and expected outcomes. This

chapter includes a description of the CLUMP Update process, planning assumptions, and its relationship with other management plans.

Chapter 2 describes the regional setting; provides an overview of NAWSCL lands and a summary of the primary military RDAT&E, training, and support activities; nonmilitary land uses; and the natural and cultural resource features of NAWSCL.

Chapter 3 contains a description of the land management strategies employed to control and direct land uses in a manner that will achieve the goals of the plan. Chapter 3 provides a description of the land use zoning process, a key element of the CLUMP management framework. This zoning method defines land use patterns in terms of land use types, general intensity, and location. It also identifies environmental management areas defined by resource type, location, and management priority that are based on a resource's protection status (i.e., endangered species, historic structures) as described in the respective resources management plans. Land use and environmental resource objectives and planned actions are provided in this chapter. These provide day-to-day direction for managing land use and were developed from the referenced management plans and from lessons learned since the endorsement of the 2005 CLUMP. These objectives and planned actions will also incorporate other refinements, a requirement identified by NAWSCL and Naval Air Warfare Center Weapons Division (NAWCWD) managers, technical personnel, and customers, and from the general public as the LEIS undergoes the public review cycle.

Chapter 4 describes NAWSCL's approach for making land use decisions and implementing the goals and objectives of the CLUMP. Elements of NAWSCL's land use management process presented include descriptions of the land use planning and environmental resource management procedures, and the CLUMP land use decision process.

The CLUMP remains the Installation's long-term, strategic plan for land use planning and management at NAWSCL and will continue to provide a formal, integrated framework for the management of land use supporting military operations, public health and safety practices, and environmental resource compliance and conservation programs.

The Plan accommodates the military mission and provides the flexibility to incorporate evolving mission requirements over the life of the plan. It accommodates mission-compatible nonmilitary uses and provides for access by Native Americans to safely visit areas of interest to Tribes while continuing the protection and conservation of environmental resources found on these Navy-administered lands. The CLUMP addresses health and safety aspects of personnel working at NAWSCL and in neighboring communities.

Note: Acreage calculations located in various tables throughout this document are based on GIS mapping data. In some instances these data slightly underestimate the total acreage for a particular feature and, when combined with other features, may not accurately represent the total acreage for the entire Installation. These errors are estimated to be less than 0.02 percent of the total for NAWSCL administered lands.

1.0 INTRODUCTION

1.1 Background

The California Desert Protection Act (CDPA) of 1994 (Public Law 103-433) (Appendix A) reauthorized the Navy's continued use of public withdrawn lands at Naval Air Weapons Station China Lake (NAWSCL), California, (the Installation) until 2014 or until the next reauthorization legislation. This Act required the development of a land use management plan for these withdrawn lands, in accordance with the requirements of the Federal Land Policy and Management Act (FLPMA) of 1976 (Public Law 94-579). Under provisions of the CDPA and through a Memorandum of Agreement (MOA) between the Navy and the Department of the Interior (DoI) through the Bureau of Land Management (BLM), management responsibility of these withdrawn lands was assigned to the Navy in March 1996. (see Appendix B for the MOA Regarding Land Management Authority)

The 2005 Comprehensive Land Use Management Plan (CLUMP) was designed to accommodate a moderate increase in the military test and training mission operations being conducted at that time and to enhance land use and environmental management programs and practices. The CLUMP was designed in accordance with China Lake business reengineering and development initiatives; Navy environmental management and compliance directives, specifically the Navy's Environmental and Natural Resources Program Manual (OPNAVINST 5090.1D); and considers the influences of evolving technologies on weapons systems research, development, acquisition, test, and evaluation (RDAT&E), and training requirements. This CLUMP Update will continue to provide the policies and procedures and land use management framework at NAWSCL for the term of this legislative withdrawal or until the next legislative reauthorization (or until this Update is itself otherwise updated).

NAWSCL is host to a number of Navy tenant commands and other Department of Defense (DoD) activities; therefore, throughout this document, any reference to "NAWSCL" includes all tenant commands. The Naval Air Warfare Center Weapons Division (NAWCWD) is the Installation's principal tenant. NAWCWD is the Navy's full-spectrum RDAT&E center of excellence for weapons systems associated with air warfare, aircraft weapons integration, missiles and missile subsystems, and assigned airborne electronic warfare systems. Other tenant commands involved in land management activities at NAWSCL are listed in Table 1-1.

The Navy has used NAWSCL lands to support its RDAT&E and training missions for more than 68 years. During wartime and in peace, NAWSCL has managed those lands in accordance with compliance and conservation requirements while serving the Navy and the nation by developing effective air-weapon systems and by providing safe and secure space for training; tactics development; and the testing of military and nonmilitary systems for government, industry, and allies.

1.2 Purpose and Need

The CLUMP remains the Installation's long-term, strategic plan that formalizes the corporate process for land use management and planning at NAWSCL. It is designed to meet current and evolving military mission requirements and continue to ensure compliance with applicable land withdrawal reauthorization legislation and Navy regulations including OPNAVINST 5090.1D, the Navy's Environmental Readiness Manual.

The CLUMP provides an integrated framework for the management of land use at NAWSCL in support of military operations, facility and infrastructure management, public health and safety practices, and environmental resource compliance and conservation programs. This CLUMP Update will continue to provide the framework for managing these operations, practices and programs until 2039 or until the next reauthorization legislation. The plan provides the tools to achieve the goals and objectives of existing and emergent land use and environmental resource compliance and conservation requirements. In accordance with the 2013 National Defense Authorization Act, the CLUMP will be reviewed every year and periodically updated in response to evolving management requirements.

1.3 Goals

NAWSCL has established the following land use management goals:

1. Maintain and enhance core RDAT&E, training, and mission-support capabilities while ensuring environmental compliance and conservation requirements are achieved and maintained to ensure the sustainability of environmental quality and to exercise responsible stewardship of public lands.

2. Improve the effectiveness and efficiency of land use management practices to accommodate the ongoing and evolving military RDAT&E, resident and transient training activities, facility and infrastructure management, and other aspects of the support mission.

3. Increase cooperation and coordination between host and tenant commands in accordance with applicable Navy guidance and best management practices.

4. Ensure public health and safety by maintaining a secure military operating environment on NAWSCL administered lands.

5. Maintain and enhance coordination and cooperation with neighboring communities, agencies, and organizations to ensure compatibility of off-installation land uses with the Navy's mission.

6. Provide reasonable accommodation of mission compatible nonmilitary land use.

1.4 Mission Summary

NAWSCL is part of the Navy Region Southwest, San Diego, under the Commander Navy Installations Command (CNIC). NAWSCL operates and maintains the Installation's facilities and provides support services, including airfield operations for the NAWCWD organization, other assigned tenants, and transient units. NAWSCL is responsible for managing all lands within the Installation boundaries to support the missions of all tenant commands, maintain environmental compliance, manage cultural and natural resources, provide safety and security services, and exercise responsible stewardship of public lands. Table 1-1 shows the various major tenants at NAWSCL and their respective missions.

Table 1-1. NAWSCL Organizations, Functions, and Missions

Organizations	Missions
NAWSCL Installation Command – Part of Navy Region Southwest, San Diego, which is part of Commander, Navy Installations Command(CNIC)	Its mission is to operate and maintain base facilities; manage land use; environmental compliance and conservation; and provide Installation support services, including airfields, for assigned tenants and activities, and transient units at NAWSCL.
NAWCWD – A division of NAVAIR and a tenant of NAWSCL	Its mission is to execute full-spectrum weapons and warfare systems RDAT&E.
Naval Facilities (NAVFAC) Southwest China Lake Detachment – A tenant of NAWSCL	Its mission is the operation, maintenance, repair and development of facilities and infrastructure and includes land use planning and environmental program management at NAWSCL.
EOD TEUONE – A tenant of NAWSCL	Its mission is to provide and conduct rigorous, relevant and realistic training for EOD and Mobile Diving and Salvage forces to persevere and triumph in all operating environments for the protection of American personnel, property, and mission accomplishment.
Naval Construction Training Center (NCTC) Port Hueneme Detachment China Lake (Seabees) – A tenant of NAWSCL	Its mission is to prepare Seabees and airmen for success by providing top-notch training efficiently and safely.
Branch Health Clinic – A tenant of NAWSCL	Its mission is to deliver quality medical, dental, psychological healthcare, and services in a safe environment and be ready to deploy.
Navy Munitions Command Detachment China Lake – A tenant of NAWSCL	Its mission is to support NAWSCL, tenants, and visiting units with fleet ordnance support.
Naval Facilities Engineering Service Center Geothermal – A tenant of NAWSCL	Its mission is to explore for and oversee development of geothermal energy on Department of Defense (DoD) installations.

1.5 Policies

Guidance and direction for the management of NAWSCL-administered lands are provided in the following general policies, which apply to all host and tenant activities.

1.5.1 Military Land Use Policy

Whether held in fee simple or withdrawn from the public domain, all NAWSCL lands are dedicated to meeting the current and evolving Navy and DoD readiness mission. NAWSCL will continue to control and direct land uses on-site to accomplish its military mission while maintaining environmental compliance and conserving environmental resources. NAWSCL will locate military and nonmilitary land use in previously approved areas, when practicable, to minimize overall land use effects to ensure the sustainability and accessibility of those features to meet evolving mission requirements and land stewardship responsibilities.

1.5.2 Environmental Compliance Policy

NAWSCL will continue to comply with all applicable statutory and regulatory requirements.

1.5.3 Environmental Resources Conservation Policy

NAWSCL will continue to protect and conserve natural and cultural resources to meet compliance, sustainability, and land stewardship requirements.

1.5.4 Coordination Policy

NAWSCL will coordinate with other federal, state, and local land use planning and resource management agencies on issues of mutual interest and/or concern.

1.5.5 Nonmilitary Land Use Policy

NAWSCL will continue to accommodate nonmilitary land uses to the extent that (1) these activities are compatible with the military mission; and (2) they do not create adverse safety, security, fiscal, regulatory, or environmental effects. Nonmilitary land use is grouped into three categories: educational and research activities, recreational activities, and commercial activities, as described in Section 2.4.

1.5.6 Native American Interests

NAWSCL will continue to maintain a Government-to-Government relationship with recognized Native American Tribes on matters of mutual interest and for undertakings requiring formal or informal consultation. NAWSCL will also continue to coordinate with other non-federally recognized Tribes and accommodate requests for access to NAWSCL in accordance with current and or future agreements and policy.

1.6 Key Management Initiatives

Implementation of this CLUMP Update will continue to enable NAWSCL to better manage the Installation's land and environmental resources to accommodate planned or emergent increases to ongoing and evolving military operations.

1. The CLUMP incorporates an integrated planning and management process to facilitate on-going military operations, conserve and protect environmental resources, enhance specific ongoing health and safety programs, and accommodate a limited number of mission compatible nonmilitary land uses. The land use planning and management processes contained in the CLUMP include the following:

    - Land management guidance to improve process efficiency, facilitate mission support, and ensure compliance with applicable laws and regulations via the Installation's Site Approval and Project Review Process (NAWSINST 11100.1), and Policy and Procedures for Implementing the Environmental Review Process at NAWSCL (NAWSINST 5090.6).

    - Updated baseline patterns of current military land use, operational test and training tempos, and environmental resources management areas as described in their respective plans and reports; i.e., 2013 NAWCWD Operational Requirements Document, 2014 Integrated Natural Resources Management Plan (INRMP), 2012 Integrated Cultural Resources Management Plan (ICRMP), and 2011 Air Installation Compatible Use Zone (AICUZ) Update Report.

    - Data, policies, and procedures to address public interest regarding community noise and other environmental quality concerns associated with ongoing and evolving RDAT&E, training, and support operations.

- Continued accommodation of mission compatible nonmilitary land uses.
- Continued efforts to enhance community and interagency coordination.
- Implement a review and amendment process for updates to the CLUMP.

2. Military operations include increases in the type and tempo of ongoing and evolving military test, training, and support operations to meet expected customer requirements over 25 years. The details of NAVAIR's proposed increases and expanded operations are provided in the 2013 *Naval Air Warfare Center Weapons Division Operational Requirements Document* (see Appendix B of the Final EIS/LEIS). New land use requirements or changes to existing land uses will continue to be accommodated through the CLUMP data-driven decision support processes. The CLUMP continues to accommodate limited mission compatible nonmilitary use and access to NAWSCL-administered lands. The pending Final EIS/LEIS contains proposed military land use and operational increases for the following areas.

    a. Range-Related Flight Operations

        - Increase the tempo of range-related test and aircrew training flight operations, including unmanned aerial system (UAS) flight operations, and including increases in nighttime flight operations.
        - Increase the tempo of daytime supersonic flight operations.

    b. Airfield Flight Operations

        - Increase the tempo of range-related test and aircrew training flight operations, including UAS flight operations, and including increases in nighttime flight operations.

    c. Directed Energy Operations

        - Increase the tempo of High-Energy Laser (HEL) and High-Power Microwave (HPM) operations.

    d. Range Land Use

        - Increase the tempo of target and test site use, including unmanned ground system (UGS) and UAS flight operations throughout the NAWSCL ranges.

3. Nonmilitary Land Use

    - Accommodate limited mission compatible nonmilitary uses on a case-by-case basis. Expected activities include Native American traditional and religious uses, research and educational activities, recreational uses, and limited commercial uses.

1.7 Expected Outcomes

Implementation of the 2014 CLUMP Update will continue to:

1. Accommodate current and evolving mission requirements in an effective and efficient manner while achieving and maintaining environmental compliance and conservation goals and objectives.

2. Ensure that all ongoing and proposed land use complies with CDPA, FLPMA, and OPNAVINST 5090.1D and other applicable requirements.

3. Implement the goals and objectives of other applicable management plans and initiatives.

4. Maintain and enhance NAWSCL's role in regional land use and ecosystem management initiatives.

1.8 Planning Assumptions

The 2014 CLUMP Update was designed in accordance with the following assumptions.

1. NAWSCL, NAWCWD's RDAT&E, and other tenant's missions will continue to provide the products and services required by the Fleet, DoD, and other customers in a timely and cost-effective manner. This mission is achievable and compatible with environmental compliance requirements and responsible stewardship of public lands.

2. The protection and conservation of NAWSCL natural and cultural resources will continue to be a primary component of the Navy's mission at NAWSCL.

3. Military land use patterns are expected to continue in a manner similar to historic trends over the term of the CLUMP.

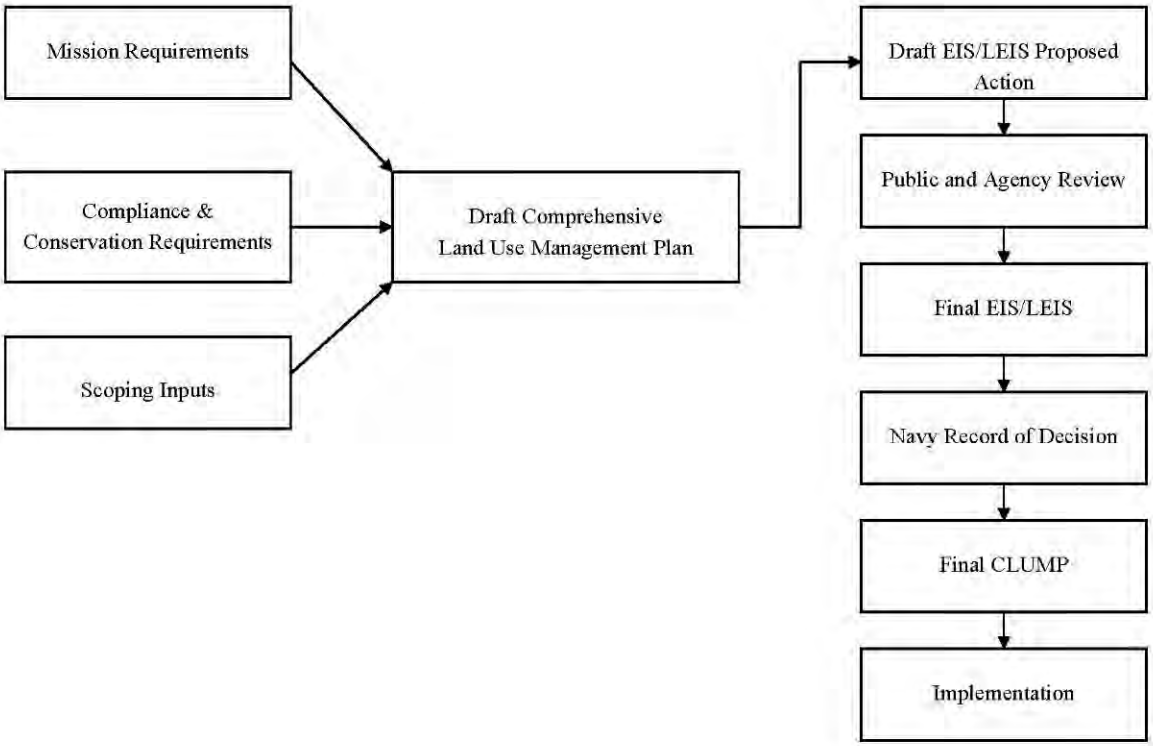
4. Specific new land use requirements will continue to be accommodated on a case-by-case basis through a timely, disciplined, and data driven decision support process.

5. Should operational increases beyond those analyzed in the EIS and this CLUMP Update be proposed for NAWSCL, those activities would be evaluated under a separate environmental review.

1.9 Development Approach

This CLUMP Update is consistent with the land use planning guidelines described in FLPMA and the California Desert Conservation Area Plan (CDCAP). The 2014 CLUMP Update also incorporates the requirements of the Sikes Act as amended in 2001. The interdisciplinary technical team that developed the revisions to the 2014 CLUMP Update was composed of staff representatives from NAWSCL, NAVFAC, and NAWCWD and BLM, and with inputs from the general public as the Final Environmental Impact Statement (EIS) undergoes the public review cycle. Mission requirements, compliance and conservation requirements, and scoping inputs were used to form the basis of the 2014 CLUMP Update, as summarized in Figure 1-1.

FIGURE 1-1 CLUMP DEVELOPMENT PROCESS



1.10 Relationship to Other NAWSCL Management Plans and Initiatives

The 2014 CLUMP Update integrates applicable goals, objectives, and planned management actions from existing management plans and operational documents, to establish a unified corporate land use management process at NAWSCL. These applicable documents include the following:

1. The *Naval Air Warfare Center Weapons Division Operational Requirements Document*, as an operational document, follows management plans as item 8.

2. The NAWSCL ICRMP (2012) describes cultural resources at NAWSCL and the regulatory framework guiding the program, and prioritizes management objectives, projects, and processes used to accomplish these objectives.

3. The NAWSCL INRMP (2014) describes on-installation natural resources, the regulatory framework affecting these resources, and the projects and objectives to inventory and manage natural resources at NAWSCL. The program emphasizes threatened or endangered species, special status species, surface and groundwater resources, and habitat conservation.

4. The NAWSCL Mainsite Master Plan (2010) is a descriptive account of the Installation's real estate, land use, facilities, utility and circulation systems, and environmental resources. The Master Plan develops a long-range road map that maximizes land use opportunities while preserving flexibility for long-term planning contingencies. The plan identifies actions to

enhance operational effectiveness and efficiencies while maximizing safety and future development.

5. The Installation Restoration Program (IRP) Site Management Plan (SMP) (2006) serves as guidance for environmental restoration activities in response to releases of hazardous substances, pollutants, contaminants, or hazardous wastes. The SMP covers the status, management, response strategy, and action items related to these environmental restoration activities.

6. The NAWSCL Airfield Master Plan (2008) reviews mission requirements; reviews ongoing and planned project initiatives; characterizes the existing challenges and constraints within the airfield; identifies and determines viable concepts for the future of Armitage Airfield; and identifies actions to support or enhance the airfield's mission.

7. The NAWSCL Activity Overview Plan (2007) provides NAWSCL with a defensible investment strategy and long-range vision that aligns with regional infrastructure investment objectives and the mission requirements of NAWSCL and its tenant commands.

8. The NAVAIR Operational Requirements Document (2013) identifies the current and near-term RDAT&E operational activities by specific type and tempo and proposed areas of operation.

1.11 Relationship to Regional Management Plans and Initiatives

1. BLM's California Desert Conservation Area (CDCA) Management Plan (1980) is a comprehensive land management plan that covers the approximately 25-million-acre expanse of land in southern California designated by Congress in 1976 through FLPMA, of which approximately 10 million acres are administered by BLM. The plan establishes goals for protection and for use of the Desert.

2. BLM's West Mojave Plan (2007) applies to the 3.2 million acres of public lands and 2.9 million acres of private lands within the planning area, and would be consistent with both the resource management plans adopted by each of the region's five military bases and with the desert tortoise recovery plan.

3. The Desert Renewable Energy Conservation Plan (DRECP) (Draft 2012) is expected to further renewable energy planning efforts and provide binding, long-term endangered species permit assurances while facilitating the review and approval of renewable energy projects in the Mojave and Colorado deserts in California.

4. City of Ridgecrest General Plan (2008) serves as the City's guide for decisions concerning land use, infrastructure, public services, and resource conservation.

5. County of San Bernardino General Plan (2007) identifies land use guidelines and designations for land in the county.

6. County of Kern General Plan (2009) identifies land use guidelines and designations for land in the county, and contains a Desert Region section for land use management in the eastern portion of the county.

7. County of Inyo General Plan (2001) identifies land use designations for all land in the county.

This page intentionally left blank.

2.0 LAND USE AND ENVIRONMENTAL RESOURCES

This chapter provides a general description of on-installation and surrounding off-installation land use and environmental resources at NAWSCL. Complete descriptions of these features are contained in the respective applicable plans referenced in Chapter 1.

Land use at NAWSCL includes a variety of military activities throughout the Mainsite and range areas. RDAT&E and training operations at NAWSCL are typically conducted within the range areas and generally fall into one of seven major mission areas. They include (1) air-to-air, (2) surface-to-air, (3) air-to-ground, (4) surface-to-surface, (5) energetics/ordnance, (6) electromagnetics (including directed energy [DE]), and (7) track test. Additional Fleet and DoD training operations supported include air combat, aircrew combat skills, and ground troop training (GTT).

NAWSCL lands are also used for a variety of mission compatible nonmilitary activities, which include Native American religious and traditional uses; scientific research and educational projects; limited recreation opportunities; and commercial activities, such as geothermal exploration and development, and various utility easements.

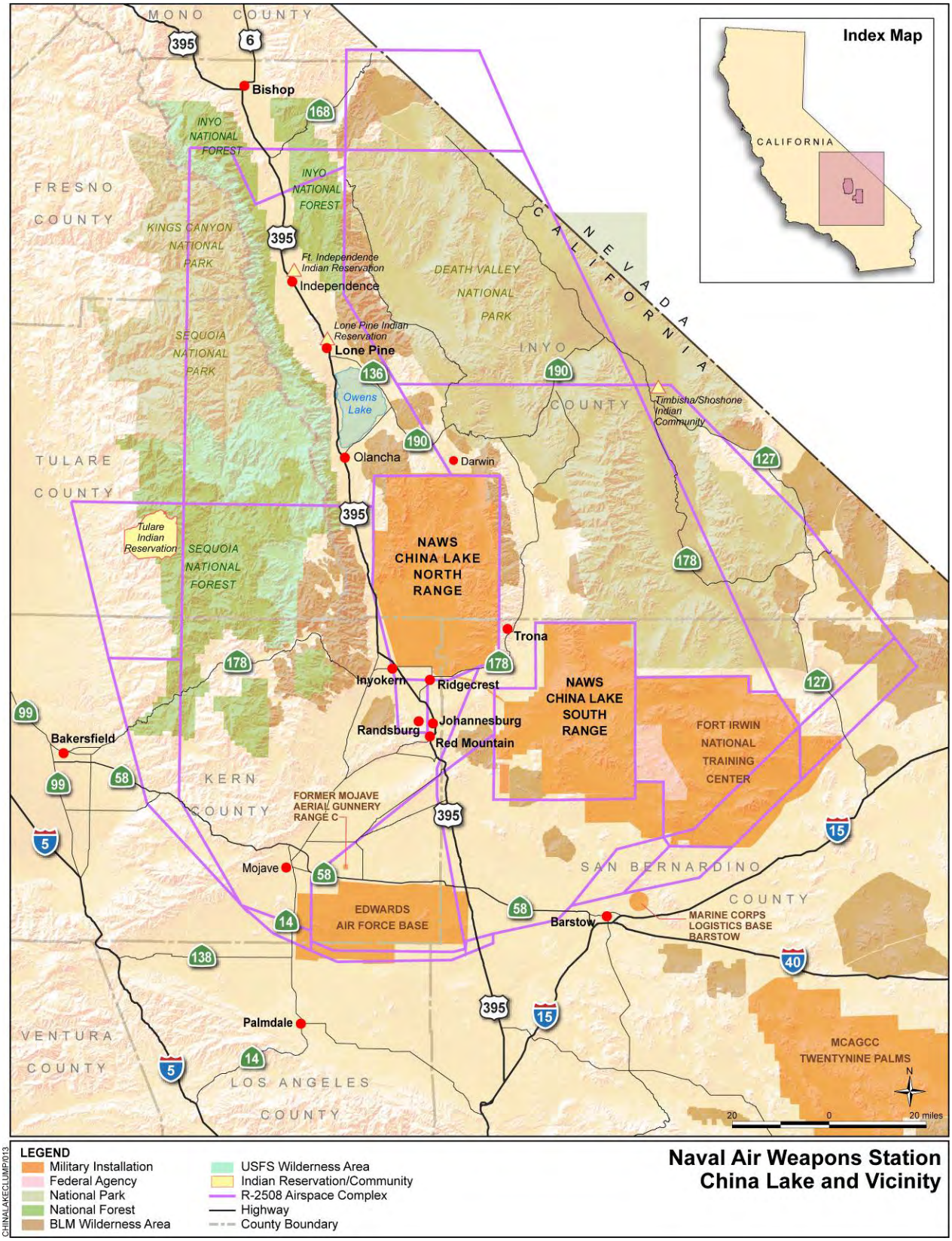
2.1 Regional Setting

NAWSCL is located in the upper Mojave Desert and Basin and Range of southeastern California and consists of two major land areas: the North Range, encompassing 606,926 acres (245,615 hectares), and the South Range, encompassing 503,510 acres (203,764 hectares). The North Range lies in portions of Inyo, Kern, and San Bernardino counties, and the South Range is located entirely within San Bernardino County. The South Range eastern perimeter borders National Training Center Fort Irwin and the National Aeronautics and Space Administration (NASA) Goldstone Facility, and the northeast corner abuts Death Valley National Park (see Figure 2-1). BLM lands are adjacent to the North Range and between the North and South Ranges. NAWSCL is also within the R-2508 Airspace Complex, which includes approximately 19,600 square miles (50,764 square kilometers) of airspace in the upper Mojave Desert. Management of military aircraft operations within the R-2508 Airspace Complex is performed by the R-2508 Joint Policy and Planning Board. The Joint Policy and Planning Board consist of the Commanders of NAWCWD, the Air Force Flight Test Center, Edwards Air Force Base (AFB), and National Training Center Fort Irwin.

Mainsite and Headquarters areas, which are in the southern boundary of the North Range, are about 150 miles (241 kilometers) northeast of Los Angeles in the northeast corner of Kern County. The incorporated city of Ridgecrest adjoins the Mainsite boundary on the south. Other nearby communities are Inyokern, 10 miles (16 kilometers) west of Mainsite, and Trona, 18 miles (29 kilometers) east of Mainsite.

NAWSCL encompasses approximately 1,700 square miles (4,403 square kilometers), or approximately 1.1 million acres (445,156 hectares) of remote, unpopulated desert land. In addition to extensive test and training ranges, the Installation has several developed areas: Mainsite, Armitage Airfield, Propulsion Laboratories, and Coso Known Geothermal Resource Area (KGRA) within the North Range.

FIGURE 2-1 REGIONAL VICINITY MAP



2.1.1 Other Federal Lands

National Park Service

The National Park Service (NPS) has jurisdiction over Death Valley National Park, which is directly north and east of NAWSCL. CDPA realigned the park's boundary and changed its status from National Monument to National Park. The boundary is now contiguous with the northeast boundary of the South Range. The park encompasses 3.2 million acres (1,295,040 hectares).

U.S. Forest Service

The U.S. Forest Service (USFS) has jurisdiction over Inyo National Forest, located approximately 8 miles (13 kilometers) east of the North Range, and Sequoia National Forest, located approximately 10 miles (16 kilometers) west of the North Range. Management of National Forest land is for sustained yield and multiple uses, including logging, mining, grazing, and recreation such as fishing, camping, and hunting (U.S. Navy 1997).

BLM Management Resource Areas

The BLM-administered land surrounding NAWSCL is part of the Ridgecrest Resource Area and managed by the Ridgecrest Field Office of BLM's California Desert District. Under FLPMA, the land is managed for multiple uses, including grazing, mining, wilderness, and recreation. Grazing includes yearly and intermittent allotments for cattle and sheep. Mining sand, gravel, gold, and trona (a mineral consisting of hydrous acid sodium carbonate) has been a historic use throughout the area. Recreational use includes hunting and target shooting, camping, sightseeing, rock hounding and hobby prospecting, hiking and backpacking, rock climbing, picnicking, skydiving and hang gliding, nature activities, and off-highway vehicle (OHV) use. Uses permitted within particular tracts of BLM-managed land are designated by the California Desert Conservation Area Plan (CDCAP) land use classifications. In accordance with CDCAP guidelines, BLM also exchanges federal land for private land when it results in greater compatibility with existing and proposed uses and plans.

BLM Management Wilderness Areas

The CDPA designated 69 individual wilderness areas covering 3.6 million acres (1,457,000 hectares). BLM's *Wilderness Areas Maps and Information Guide* (DoI 1995) shows 10 wilderness areas around NAWSCL, all of which may include other federal, state, and private land. Table 2-1 lists the wilderness areas and other pertinent data.

Table 2-1. Bureau of Land Management Wilderness Areas Near NAWSCL

Area	Acres (hectares)	Nominating Resource
Argus Range	74,890 (30,308)	Biological, Geological, Cultural
Golden Valley	37,700 (15,257)	Biological
Malpais Mesa	32,360 (13,096)	Biological, Geological, Cultural
Grass Valley	31,695 (12,827)	Biological
Surprise Canyon	29,180 (11,809)	Biological, Cultural
Coso Range	50,520 (20,445)	Biological, Geological
Sacatar Trail	51,900 (21,004)	Biological, Cultural
Owens Peak	74,640 (30,207)	Biological, Cultural
Kiavah	88,290 (35,731)	Biological
Manly Peak	16,105 (6,518)	Biological, Cultural, Geological
Darwin Falls	8,600 (3,480)	Biological, Geological
Great Falls Basin Study Area	8,485 (3,434)	Biological

Source: DoI 1995.

2.1.2 Other Military Installations

In 1981, Fort Irwin became the Army's National Training Center and is the Army's principal training facility for armor maneuver training. National Training Center training operations simulate full-scale air and land combat situations on more than 750,000 acres (303,515 hectares) of land that is adjacent to the eastern and southern boundary of the South Range.

The Mojave Aerial Gunnery Range C was a bombing and strafing range that was part of Marine Corps Auxiliary Air Station (MCAAS) Mojave (Malcom Pirnie, Inc. 2006). The range consisted of seven individual targets (Targets 71 through 76 and 101). The lands are part of the Formerly Used Defense Sites (FUDS) program under the control of the Los Angeles District of the United States Army Corps of Engineers (USACE), except for a portion of Target 71 that was retained by the U.S. Navy as a training area. However, the Gunnery Range C and Target 71 are no longer in use.

The Air Force Cuddeback Gunnery Range, located west of Mojave B South in the South Range, is deactivated. Edwards AFB is also located nearby NAWSCL.

2.2 China Lake Lands

2.2.1 Physical Features

NAWSCL lies within two physiographic provinces: the Basin and Range, and the Mojave Desert. The Basin and Range Province extends from Oregon to Utah, through Nevada, southern Arizona, and southern New Mexico; to the state of Sonora Mexico. The Province includes the highest and lowest elevations in the lower 48 states (Mount Whitney at 14,480 feet [4,416 meters] above mean sea level (AMSL) and Badwater in Death Valley at -280 feet [-86 meters] AMSL). Topography within the Basin and Range Province is the result of extension and thinning of the lithosphere, which is composed of the crust and upper mantle of the Earth. Extensional environments like the Basin and Range Province are characterized by faults that level off with depth (see Figure 2-2 and 2-3).

FIGURE 2-2 TOPOGRAPHY, NORTH RANGE

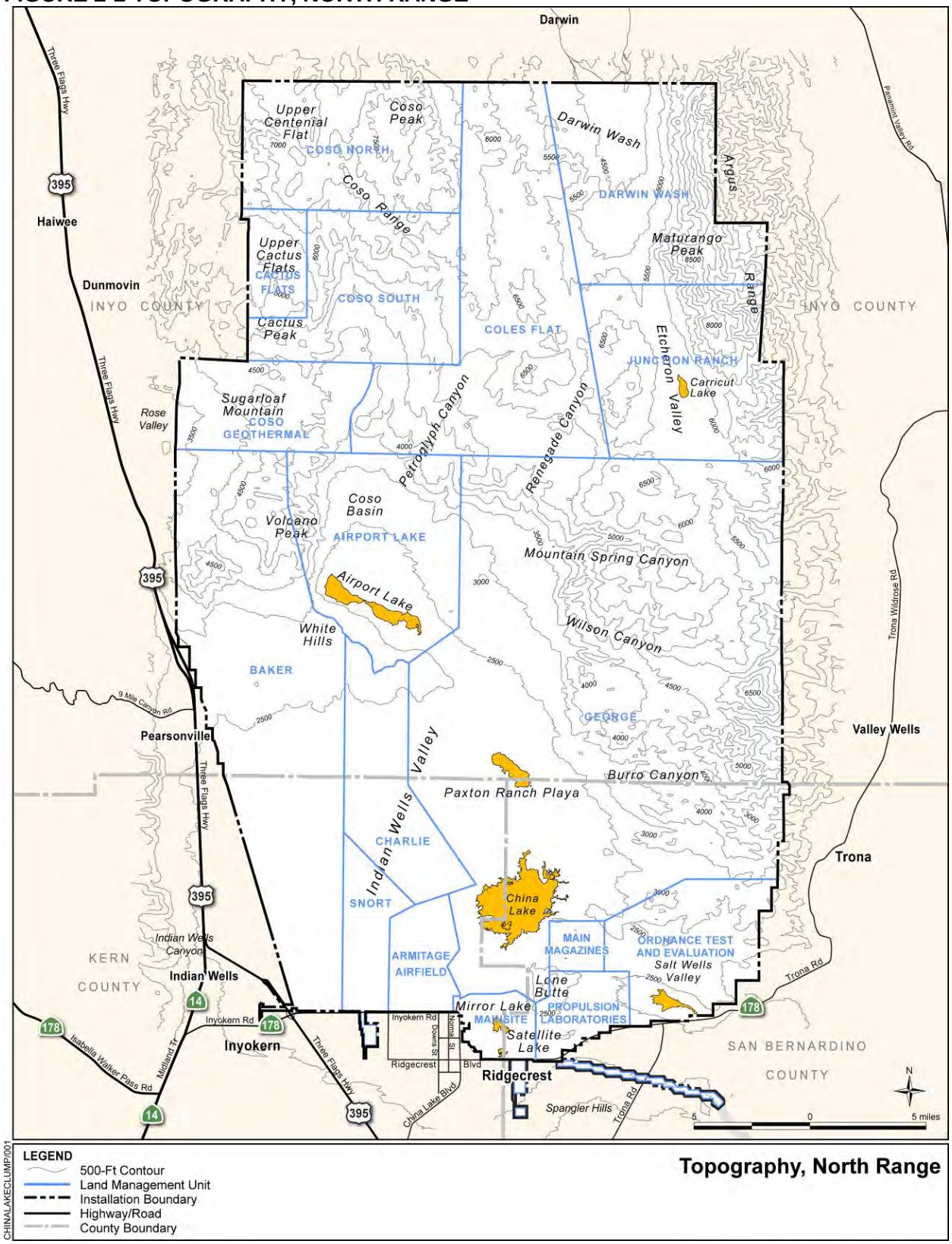
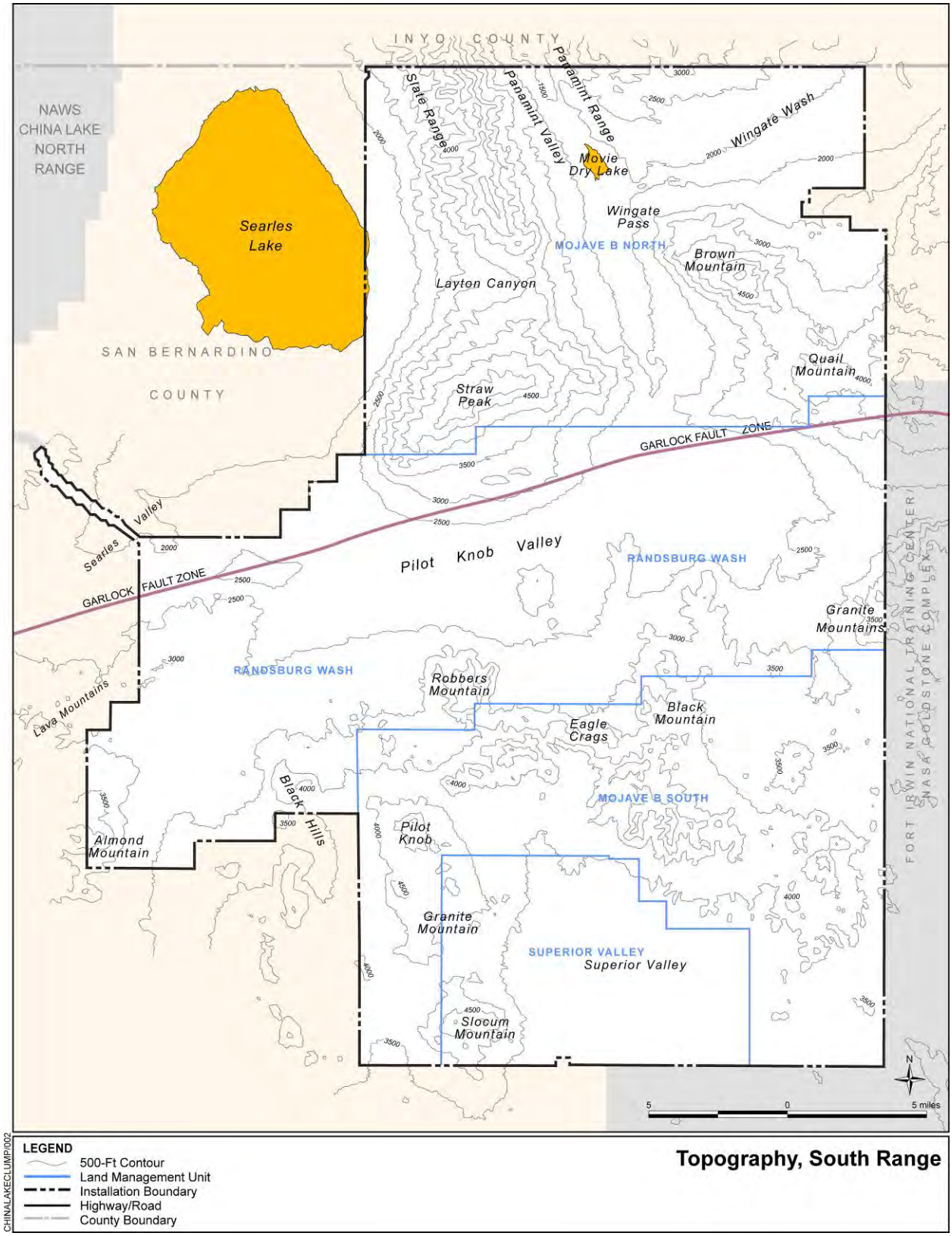


FIGURE 2-3 TOPOGRAPHY, SOUTH RANGE



The Mojave Desert Province includes part of Nevada, southern Arizona, and New Mexico, and reaches into Mexico. California's Mojave Desert, which is part of the larger Sonoran Desert, represents a transition zone between the two physiographic provinces (Lobeck 1975). Topography within the Mojave Desert Province is dominated by isolated mountain ranges separated by expanses of desert plains. It has an interior enclosed drainage and many playas. There are two important fault trends that control topography: a prominent northwest/southeast trend and a secondary east/west trend.

2.2.2 Land Ownership

Figures 2-4 and 2-5 show the land assets within the NAWSCL boundaries for the North Range and South Range, respectively. NAWSCL lands are composed of property owned by the Department of the Navy (DoN); DoI lands withdrawn from public domain; and lands acquired through lease, easement, or permit for Navy use. The acreage of each category is shown in Table 2-2.

Table 2-2. Lands Acquired by Lease, Easement, or Permit for Navy Use

Category	Acres[(a)]
Fee simple (owned by U.S. Navy)	61,745
Withdrawn from public domain (expiration 30 September 2014)	1,044,126
License/permit/agreement, easement	45,040
Total Land Assets	**1,150,911**

(a) Acreage calculations are based on 3013 Cadastral Survey of NAWSCL lands.

Source: U.S. Navy 2013a.

Range approach corridors, located south of the North Range, were established in the mid-1980s to reduce risk to people and property, and to protect flight activities from encroachment and uses that may adversely affect flight safety. The corridors primarily support aircraft approaches to targets on the George (G Range Approach Corridor) and Baker/Charlie (B/C Range Approach Corridor) ranges. Each corridor minimizes safety risks and noise levels to Ridgecrest residents and NAWSCL personnel that may result from flight operations. Land within the approach corridors either have been purchased by the Navy or are managed under agreements (e.g., rights-of-way). Any proposed new land use within these designated areas must be compatible with the existing use as an aircraft approach corridor.

2.2.3 Land Management Units

Because NAWSCL is approximately 1.1 million acres (445,156 hectares), land areas are divided into smaller units to facilitate operations planning and management. Land management units (LMUs) (except Mainsite, Propulsion Laboratories, Main Magazines, and Armitage Airfield) are defined as active ranges per DoD Directive 4715.11, Environmental and Explosives Safety Management on Department of Defense Active and Inactive Ranges Within the United States. Also defined by their principal function and operational uses, land areas are generally separated

FIGURE 2-4 ON-INSTALLATION LAND OWNERSHIP, NORTH RANGE

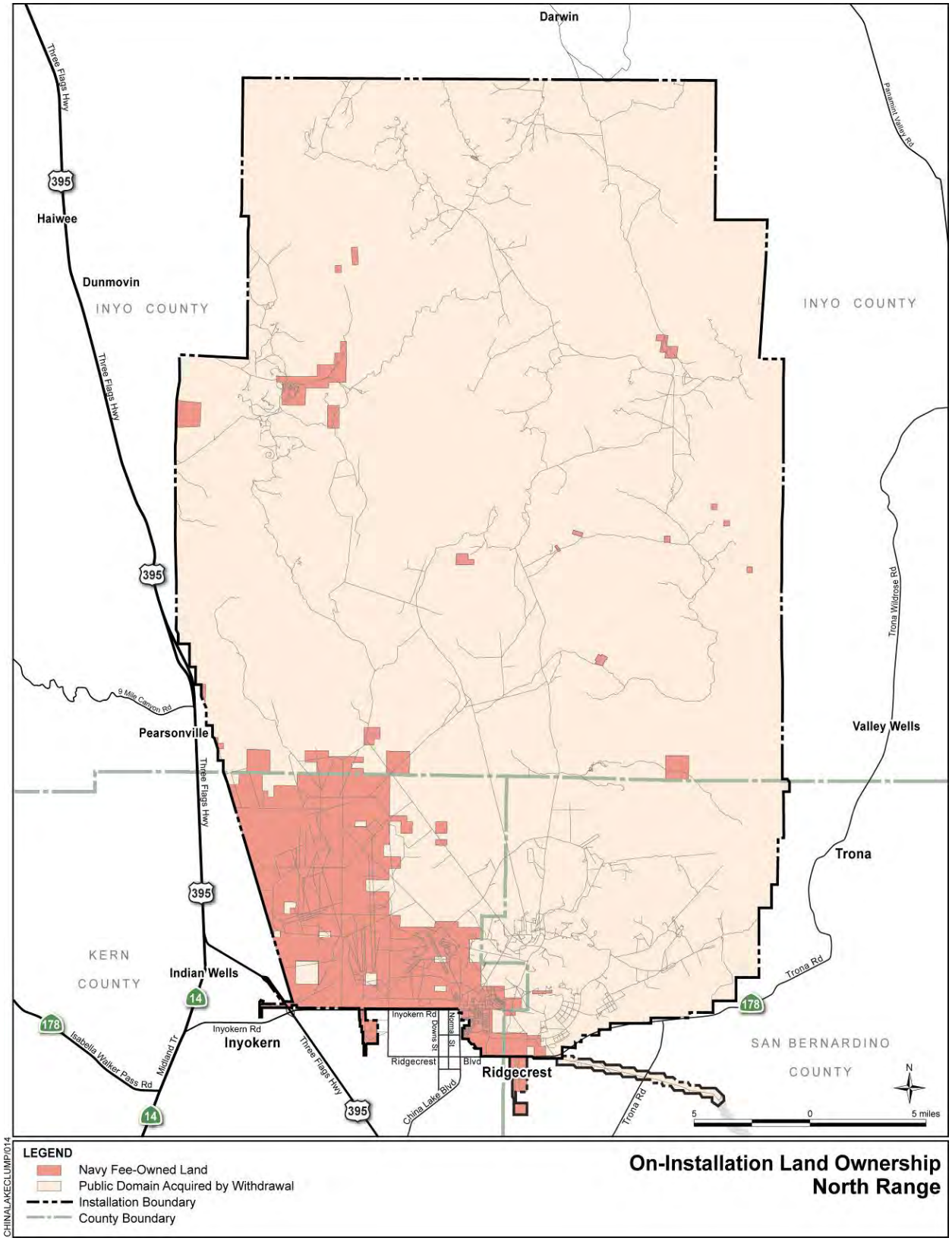
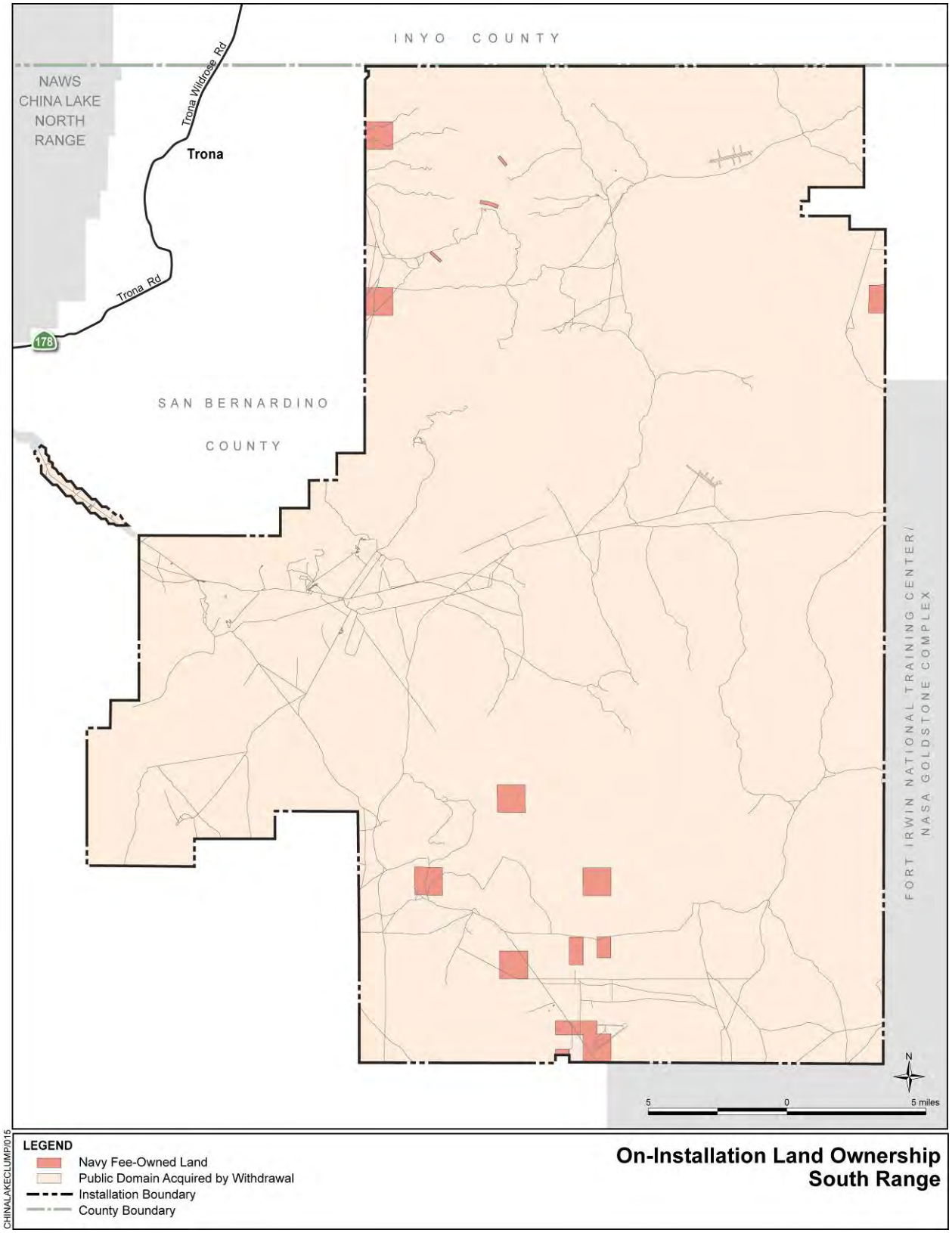


FIGURE 2-5 ON-INSTALLATION LAND OWNERSHIP, SOUTH RANGE



into two principal categories: those within the developed portions of the installation (i.e., Mainsite, Armitage Airfield, Main Magazines, and Propulsion Laboratories) and those that comprise the test and training areas of the North and South Ranges (the two main categories are discussed in the sections below). The LMUs north of Airport Lake have been reconfigured to help better manage access control for safety and security. The LMUs are shown in Figures 2-6 and 2-7, and their principal functions are listed in Table 2-3.

2.3 Mission-Related Activities

NAWSCL is a major RDAT&E and training installation for the U.S. Navy and DoD. NAWCWD operates and uses these RDAT&E capabilities for air-to-air, air-to-surface, surface-to-air, and surface-to-surface testing environments. Support assets include an electronic warfare-testing environment, gun ranges, a radar cross-section range, high-speed test tracks, parachute testing areas, and munitions ordnance test facilities. Aircrew training and ground troop training activities occur throughout NAWSCL ranges.

NAWSCL Ranges were established during World War II to test newly developed rockets and to train pilots in the use of these weapons. Current research and development (R&D) operations at NAWSCL occur within the laboratories, while test and evaluation (T&E) operations typically take place within the air and ground ranges. These ranges include the special-purpose ranges, such as the Junction Range Radar Cross Section facility and the Supersonic Naval Ordnance Research Track (SNORT) facility. Aircraft operations are staged from Armitage Airfield. The type and tempo of RDAT&E activities varies, depending on program demands and world events.

Land uses within the LMUs are established to support the military operations or activities in each area. These operations fall into one of five categories: R&D, acquisition, T&E, training, or support. Each category is described in the following sections.

2.3.1 Research and Development

Weapons R&D supports all phases of weapon systems development, from the earliest concepts of a weapon to engineering and manufacturing to Fleet use. The goal of weapons R&D is to explore the use of promising technology to solve emerging war-fighter needs.

At NAWSCL, research activities focus on weapons guidance and control, warheads, explosives, propellants, pyrotechnics, propulsion systems, airframes, electromagnetic systems, and the basic chemistry and physics that support these areas. R&D activities generally take place in laboratories where basic and applied research is performed. NAWSCL laboratory facilities are primarily within the developed areas at Mainsite and in the Propulsion Laboratories areas. Seven main laboratories are situated between Mainsite and the Airfield: Michelson Laboratory, the Engineering Laboratory, Lauritsen Laboratory, Thompson Laboratories, Advanced Weapons Laboratories, and the Propulsion Laboratories Complex, which is made up of the China Lake Propulsion Laboratory and the Salt Wells Propulsion Laboratory.

2.3.2 Test and Evaluation

Weapons T&E is a continuous process throughout the weapons system lifecycle. Weapons systems and components are tested and evaluated under natural operating conditions at

FIGURE 2-6 LAND MANAGEMENT UNITS, NORTH RANGE

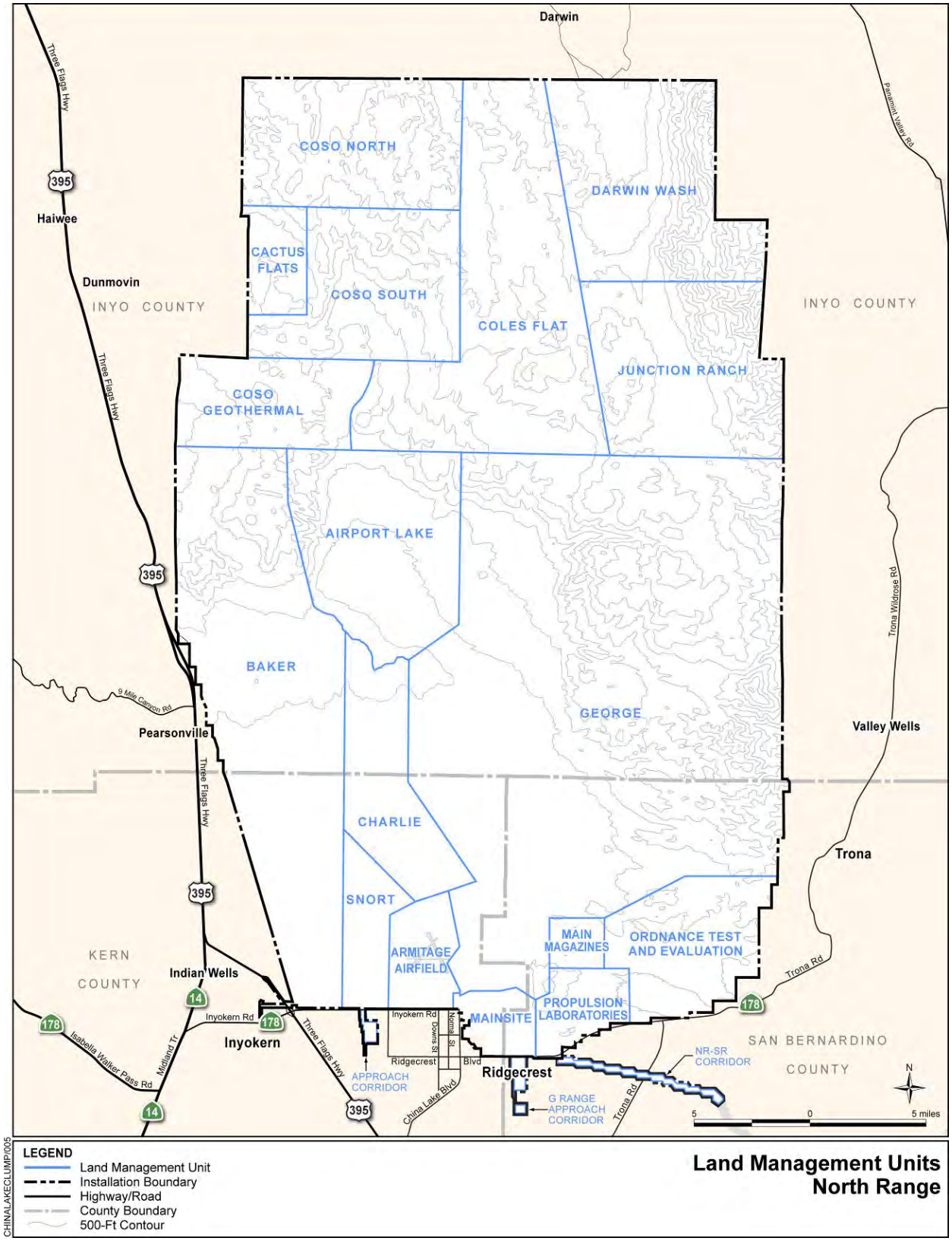


FIGURE 2-7 LAND MANAGEMENT UNITS, SOUTH RANGE

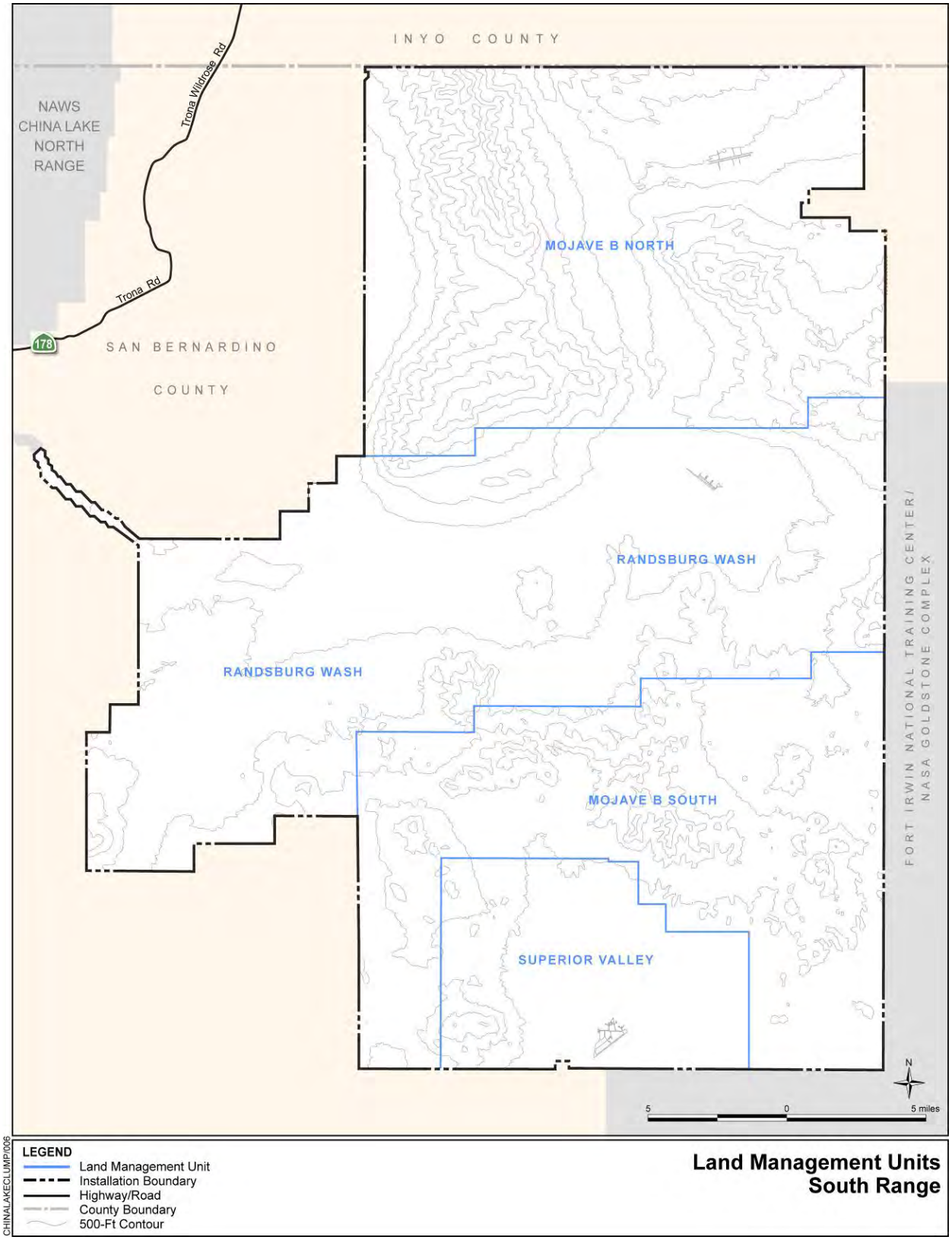


Table 2-3 Land Management Units

Management Unit	Description
North Range	
Airport Lake Range	Occupies approximately 57 square miles (148 square kilometers) in the central portion of the North Range. It is a large playa surrounded on three sides by hills and mountains. It contains the G-4 test track, weapons target sites, unmanned systems, and ordnance impact areas.
Armitage Airfield	Occupies approximately 13 square miles (34 square kilometers) in the southern portion of the North Range. It contains three major runways; facilities for aircraft maintenance, hangars, ordnance handling and storage; ground support equipment; and the Range Control Center.
Baker Range	Occupies approximately 121 square miles (313 square kilometers) in the western portion of the North Range. Contains the B-4 vehicle barrier track, target sites, and ordnance impact areas.
Cactus Flats Range	Occupies approximately 2 square miles (5 square kilometers) in the northwestern portion of the North Range. It is located at an approximate elevation of 5,100 feet and includes warhead detonation test sites.
Charlie Range	Occupies approximately 42 square miles (109 square kilometers) in the southwestern portion of the North Range. Contains weapon target sites, ordnance impact areas, and high-speed track testing.
Coles Flat Range	Occupies approximately 98 square miles (254 square kilometers) in the north-central portion of the North Range and includes weapons, target, and ordnance impact areas.
Coso North Range	Occupies approximately 70 square miles (181 square kilometers) in the northwestern corner of the North Range. Represents a typical combat environment characterized by rough, mountainous terrain covered with piñon pine, juniper tree, and brush. It is located on a broad mountainous plateau and includes ordnance impact areas.
Coso South Range	Occupies approximately 49 square miles (127 square kilometers) in the northwestern corner of the North Range and is located directly south of the Coso North Range. Represents a typical combat environment characterized by rough, mountainous terrain covered with piñon pine, juniper tree, and brush. It is located on a broad mountainous plateau and includes ordnance impact areas.
Coso Geothermal	Occupies approximately 26 square miles (67 square kilometers) and is located southwest of the Coso South Range in the western portion of the North Range. Contains geothermal power plants, overflight for weapons training, and safety/security buffer for weapons testing.
Darwin Wash	Occupies approximately 62 square miles (160 square kilometers) in the northeast portion of the North Range. Located at 4,500 feet, it contains a major portion of the Naval Expeditionary Combat Command Training Complex used for combat training of explosives ordnance disposal technicians and other forces, as well as Joint Counter-Improvised Explosive Device Facility (JCIF).
George Range	Occupies approximately 305 square miles (790 square kilometers) in the eastern portion of the North Range known as Indian Wells Valley. The Argus Mountains, located to the east, and the Coso Mountains, located to the north, act as natural buffers for safety and security and ideal vantage points for test instrumentation. Contains the Weapons Survivability Complex, the Burro Canyon Open Burn/Open Detonation Facility, and warhead detonation test sites and ordnance impact areas.
Junction Ranch	Occupies approximately 65 square miles (168 square kilometers) in the northeastern part of the North Range. Test area for electromagnetic and specialized testing. Contains the Radar Cross Section Range.
Mainsite	Occupies approximately 8 square miles (21 square kilometers) in the southern portion of the North Range. Contains NAWSCL Headquarters, principal laboratories, housing, schools, and most administrative and support functions; is the largest developed area on-installation.

Table 2-3 Land Management Units

Management Unit	Description
Main Magazines	Occupies approximately 5 square miles (13 square kilometers) in the southeastern portion of the North Range. Contains ordnance storage, administrative facilities, and safety areas.
Ordnance Test and Evaluation	Occupies approximately 90 square miles (233 square kilometers) in the southeastern corner of the North Range. Contains facilities for safety (i.e., insensitive munitions), propulsion, and warhead testing.
Propulsion Laboratories	Occupies approximately 15 square miles (39 square kilometers) in the southeast corner of the North Range. It consists of two areas: the China Lake Propulsion Laboratory and the Salt Wells Propulsion Laboratory, each with more than 100 buildings and test facilities dedicated to propellant and explosives testing. Salt Wells is also China Lake's primary ordnance processing/manufacturing area.
SNORT	Occupies approximately 15 square miles (39 square kilometers) in the southwest portion of the North Range. It is a heavily instrumented facility with multiple high-speed tracks and several special purpose areas with warhead testing and ordnance impact areas. The vehicle barrier track is located at SNORT.
South Range	
Mojave B North Range	Occupies approximately 238 square miles (616 square kilometers) in the northern portion of the South Range. The range has two valley floors: one with a north/south orientation and the other east/west. High mountains surround each valley. Contains Wingate Airfield, weapons target sites, ordnance impact areas, aircrew training, EW test sites, and GTT.
Mojave B South Range	Occupies approximately 180 square miles (466 square kilometers) in the southern portion of the South Range. Contains areas supporting aircrew training, EW test sites, and GTT.
Randsburg Wash Range	Occupies approximately 282 square miles (730 square kilometers) in the central portion of the South Range. Contains Charlie Airfield and the Electronic Combat Range (ECR), unmanned systems airfield/hangar, ordnance impact areas and target sites, and numerous EW test sites. ECR is on the level floor of an isolated 15-mile-long valley, bordered by mountains to the north and south.
Superior Valley	Occupies approximately 74 square miles (192 square kilometers) within Mojave B South. It is the primary location for aircrew training and tactics development and ordnance impact areas.

NAWSCL to replicate realistic employment and operational scenarios to the maximum extent practicable.

Weapon systems and components are tested and evaluated under realistic operating conditions in the air and on the ground ranges at NAWSCL to replicate realistic scenarios to the maximum extent feasible. Target areas are designated for delivering ordnance, such as bullets, missiles, rockets, and bombs, and may include the use of a physical object, such as a billboard, a tank, or an electronic target.

Per the *Naval Air Warfare Center Weapons Division Operational Requirements Document*, major mission areas encompassing the RDAT&E and Fleet training operations supported at NAWSCL include but are not limited to:

1. **Air-to-Air.** A typical air-to-air scenario involves the test of an air-launched, air-intercept weapon against a variety of aerial targets. Air-to-air operations generally employ manned and/or unmanned aircraft, a kinetic or DE weapon system, a target, and countermeasure

devices such as flares or chaff. Air-to-air testing assesses and evaluates weapons and weapon systems and the integration of weapon systems with the aircraft. Operations may include captive-carry inert, live motor but no warhead, or tactical all-up round for firing and warhead detonation.

2. **Surface-to-Air.** A typical surface-to-air scenario has similar hazard patterns as air-to-air operations. This scenario involves the test of a surface-launched kinetic or DE weapon against a variety of aerial targets. Testing may also include the use of countermeasure devices such as flares and chaff. Surface-to-air testing evaluates overall weapon system performance, warhead effectiveness, and software/hardware modifications or upgrades of ground-based weapons systems. Operations may include inert warheads or tactical all-up rounds for firing and warhead detonation. Targets used in surface-to-air testing include full-scale surface-launched targets, air- or surface-launched subscale targets, unmanned systems, or helicopter targets. This scenario includes the test of a ground-launched weapon from a fixed launcher.

3. **Air-to-Ground.** A typical air-to-ground scenario involves the test of an air-launched, ground attack, kinetic, or DE weapon against a variety of ground-based targets. Air-to-ground testing assesses and evaluates weapon systems, the integration of air-to-ground weapons or weapon systems to the aircraft, warhead effectiveness, and weapon systems and/or aircraft software and hardware modifications or upgrades. Air-to-ground tests are heavily dependent on ground targets, which can include a wide variety of both vehicular and structural targets. Operations may include captive-carry inert, live motor but no warhead, or tactical all-up round for firing and warhead detonation.

4. **Surface-to-Surface.** A typical surface-to-surface scenario involves the test of a surface-launched, kinetic, or DE weapon against a surface target. Surface-to-surface testing evaluates the overall weapon system performance, warhead effectiveness, and software/hardware modifications or upgrades of ground-based weapons systems. Operations may include inert warheads or tactical all-up rounds for firing and warhead detonation. Targets used in surface-to-surface testing include both fixed and mobile. This scenario includes the testing of naval guns and other types of smaller caliber guns from fixed surface sites, ground vehicles, and air platforms.

5. **Energetics/Ordnance.** Energetics/Ordnance testing includes test, training, and disposal activities related to the use of energetic materials such as propellants and explosives. Much of the work conducted by the Energetics Research Division on explosives, propellants, and pyrotechnics is included in this category. In addition, the development and test of counter improvised explosive device (CIED) detection and neutralization systems may be considered energetics testing.

6. **Electromagnetics (including DE).** An electromagnetics scenario involves ground and flight tests that radiate radio frequency (RF) energy across much of the electromagnetic spectrum. These operations do not typically include the release of kinetic weapons such as missiles, rockets, bombs, and guns. However, they may involve the release of electronic warfare (EW) defensive countermeasure devices such as chaff, flares, and decoys. Electromagnetic (EM) operations include antenna pattern and radar cross-section measurements; defensive and offensive EW systems; laser systems for targeting, weapons, communication, mapping, etc.; DE weapons; experimental electromagnetics; communications; EM vulnerability of electronic systems; and other RF-related testing. This category may also include the development and test of CIED detection and neutralization systems.

7. **Track Test.** This scenario involves the test of a kinetic or DE weapon system mounted on a sled capable of operating at speeds ranging from subsonic to hypersonic. A test article, often a full-scale aircraft or weapon system, is propelled down the track to simulate flight conditions. Typical test track operations include target penetration using live high explosive (HE) warheads, live fuses, aircrew ejection systems, bombs, missiles, rockets, free flight terminal ballistics, environmental, soft recovery, EW and countermeasures, and vehicle and barrier testing. An example of this scenario is the test of a weapon system for target penetration capabilities against a fixed target, often a concrete block, mounted down-range of the muzzle section of the track. The weapon is separated from a propelled sled, which is retarded via water brake prior to the muzzle, and allowed to transit down-range to impact.

2.3.3 Training Activities

NAWSCL also provides facilities and support for aircrew and ground-based training activities by military units from all branches of DoD. These activities are accommodated on a noninterference basis with the primary RDAT&E mission. The varied terrain and environmental conditions throughout the North and South Ranges support training in air-to-air and air-to-surface combat skills, including parachute systems training. GTT is also an element of NAWSCL operations that uses the North and South Range targets and test areas, roads, and facility sites.

Aircrew Training

Aircrew training operations address requirements for proficiency in the use of evolving aircraft and weapons system technologies and warfighter tactics for navigation, target acquisition, weapons systems delivery, threat evasion, and battle damage assessment in realistic combat scenarios and threat environments throughout the varied terrain on the NAWSCL ranges. Aircrew training occurs over both the North and South Ranges. On the North Range, aircrew training takes place over the Coso Military Target Range, Baker Range, Charlie Range, George Range, and Airport Lake. Aircrew training in electronic combat over the South Range uses impact targets at Charlie Airfield in Randsburg Wash, Wingate Airfield in Mojave B North, and the Superior Valley Range. The Superior Valley Tactical Training Range is the most heavily used area for tactical training with air-to-surface weapon systems for fleet squadrons. This range is used primarily to deliver inert ordnance, including practice bombs, rockets, flare, chaff cartridges, and gun projectiles.

Ground Troop Training

GTT at NAWSCL involves small-scale, theater-relevant combat training of ground troops. Training is based on customer requirements and can be accomplished as part of a larger test activity or as a discrete training event. Examples include force reconnaissance, insertion and extraction, close air support, fleet area control and surveillance, and other types of tactical exercises. Activities conducted by EODTEU-1 and the Seabees outside of their normal operating areas would also be captured in this category. GTT activities are managed according to established standard operating procedure.

Ground troops may be on foot, with or without military support animals (i.e., horses, mules, or military working dogs) and may involve multiple support vehicle types. GTT operations may also involve support aircraft (manned or unmanned; fixed or rotary wing) and access to distinct

terrain such as mines, caves, tunnels, sloped areas, or vegetated areas to satisfy unique training requirements.

Small group training (approximately 8 troops) without support vehicles may be conducted in currently approved operating areas as well as undisturbed areas throughout the North and South Ranges. GTT activities occurring in undisturbed areas would have no associated ground-disturbing activities. These operations occur on an as-needed basis. Small group training overland would be intentionally varied in order to reduce the possibility of the formation or marking of trails by ground troops. Only pedestrian traffic, including pack animals and working dogs, are approved for off-road travel.

GTT involving larger groups (not to exceed 40 troops) or using support vehicles may only occur in areas where ground disturbance would not be increased such as existing travel surfaces (i.e., roads, turnouts, or parking lots), target areas, test sites, and instrumentation sites. Small group training with support vehicles may occur on an as needed basis.

Seabees

Seabees conduct training operations at the Mineral Products Training Complex and at discrete locations throughout the Installation. Activities in the Mineral Products Training Complex include drilling, blasting, and stockpiling aggregate in the existing quarry, and crushing, cleaning and sorting aggregate and manufacturing asphalt and concrete in the mineral processing area.

The Seabee Well Drilling School provides opportunities for water well drilling training. Training operations on drilling, repairing, and plugging/abandoning water wells are conducted throughout the Installation on an as-needed basis. To minimize surface disturbance, proposed water wells are and would continue to be located adjacent to existing roads, and well pads are and would continue to be designed to be as small as practicable while still accommodating the drill rig and all support vehicles and materials. Well pads that cannot be located in disturbed areas would be cleared of vegetation. A sump would be dug to contain the cutting and drilling mud. Once the well is drilled and the sump is dry, the sump would be backfilled and contoured. Site-specific environmental documentation is prepared for the drilling of new water wells. Construction battalion training operations are considered GTT events and are captured within GTT event numbers.

Parachute Testing and Training

Parachute drop zones are located on both the North and South Ranges. They are typically used to support RDAT&E and all types of parachute proficiency training (personnel or equipment) for all drop zones across the North and South Ranges.

2.3.4 Support Activities

Most of the land currently used for military support (administrative buildings, public works, family housing, community center, and other support facilities) is within developed areas at Mainsite and the other developed areas in the southern portion of the North Range. Administrative offices, industrial buildings, laboratories, and storage areas are primarily located at Mainsite, Armitage Airfield, and the Propulsion Laboratories area. Mainsite facilities include the headquarters, administrative offices, Public Works Department compound, industrial buildings, and testing/research buildings. Operations, maintenance, medical, administration, housing,

recreation, supply, public schools, fire and police, childcare, religious, and exchange/commissary facilities are also located at Mainsite.

Facilities at Armitage Airfield include three runways, aircraft maintenance facilities, aircraft fuel storage facilities, ordnance handling and storage facilities, ground support equipment maintenance facilities, a fire station, and aviation supply warehouses. The Propulsion Laboratories consist of building and test facilities dedicated to RDAT&E of propellants and explosives. Facilities occupy approximately 8,912 acres (3,606 hectares), or 1.5 percent, of the North Range, and 527 acres (213 hectares), or 0.1 percent, of the South Range.

2.3.5 Ordnance Use

Since many of the activities at NAWSCL involve the testing and use of explosives (live ordnance), extensive safety programs continue to be implemented to ensure the safety of personnel and property and to minimize the risk of using explosives and their components. Safety programs and operational procedures are employed through all phases of ordnance use, including the storage, transportation, loading, detonation, and cleanup of range test and target sites. Ordnance is generally classified as live or inert. Live ordnance generally contains an HE warhead. Inert ordnance does not have a live warhead, but may contain a fuse, sensor, spotting charge, or other energetic materials that may pose a safety hazard. At NAWSCL, approximately 80 percent of the ordnance used is inert. HE ordnance use on-installation (approximately 20 percent) occurs primarily at the Airport Lake Target area, with the remainder being dispersed at other authorized areas depending on RDAT&E needs.

Historic Ordnance Use

NAWSCL land ranges played a critical role in helping the U.S. meet the challenges and emergencies of World War II, the Korean Conflict, and the Vietnam War. Due to incomplete surviving records from this period, testing and training that occurred on NAWSCL lands during those early years is not entirely accounted for. As a result, and as an ongoing safety consideration, all remote areas of NAWSCL are considered potentially contaminated to some degree by unexploded ordnance (UXO) in accordance with the NAWSINST 8020.15 and the NAWCWD/NAWSINST 5090.1. UXO and related debris from historical test and training activities are recovered, as funding permits. Figures 2-8 and 2-9 illustrate the anticipated extent of historic concentrated ordnance use patterns on the North and South Ranges, respectively.

Contemporary Ordnance Use

Today ordnance use on the ranges is carefully controlled, monitored, and tracked. It is not uncommon for a large quantity of a particular type of ordnance to be used one year and then for the tempo to drop dramatically the following year. The type and tempo of ordnance use at NAWSCL fluctuates from year to year based on need (which is driven by operational needs that evolve in response to world events). Inert and HE ordnance are used to meet defined mission requirements and are allocated to specific target and test sites.

FIGURE 2-8 HISTORIC CONCENTRATED ORDNANCE USE AREAS, NORTH RANGE

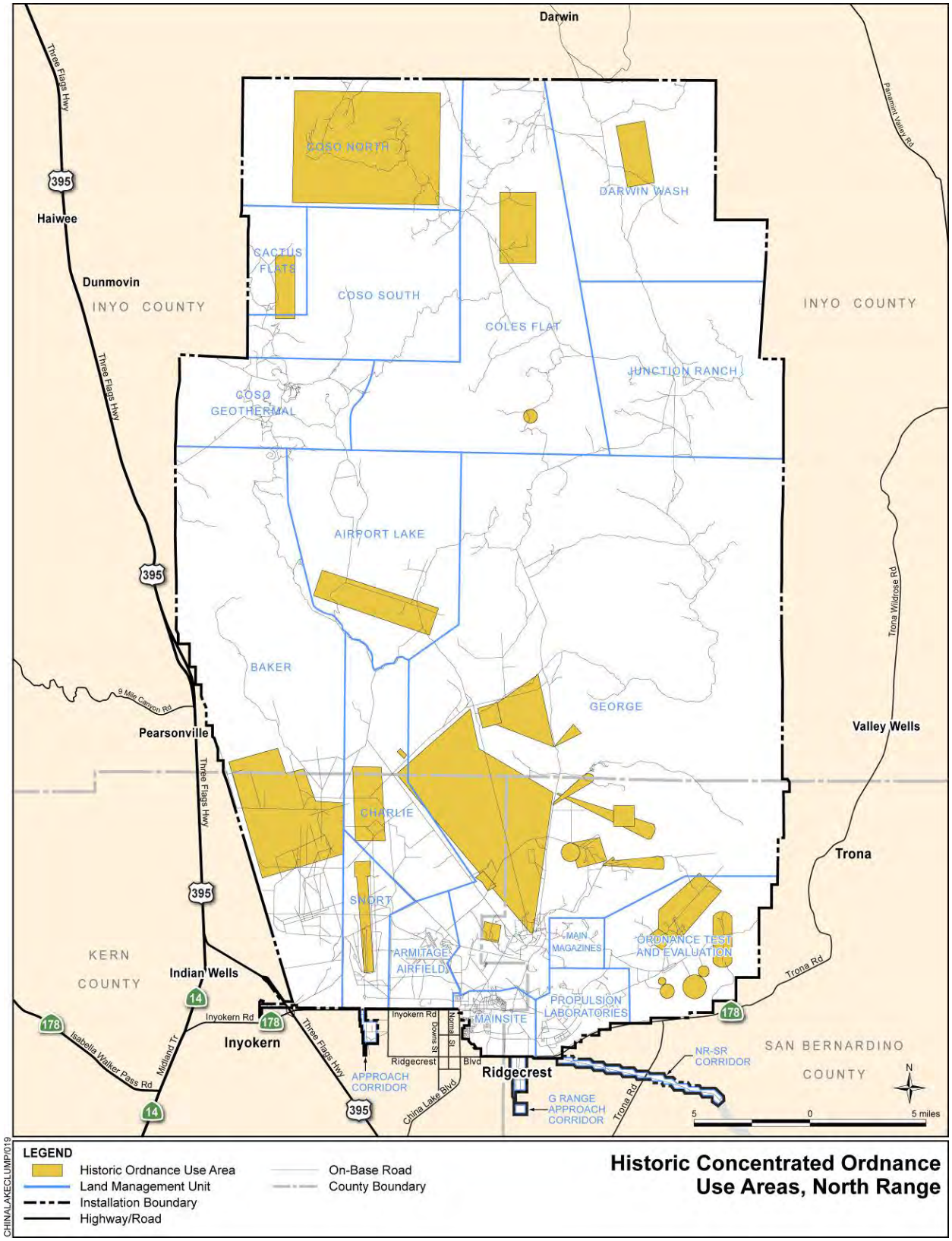
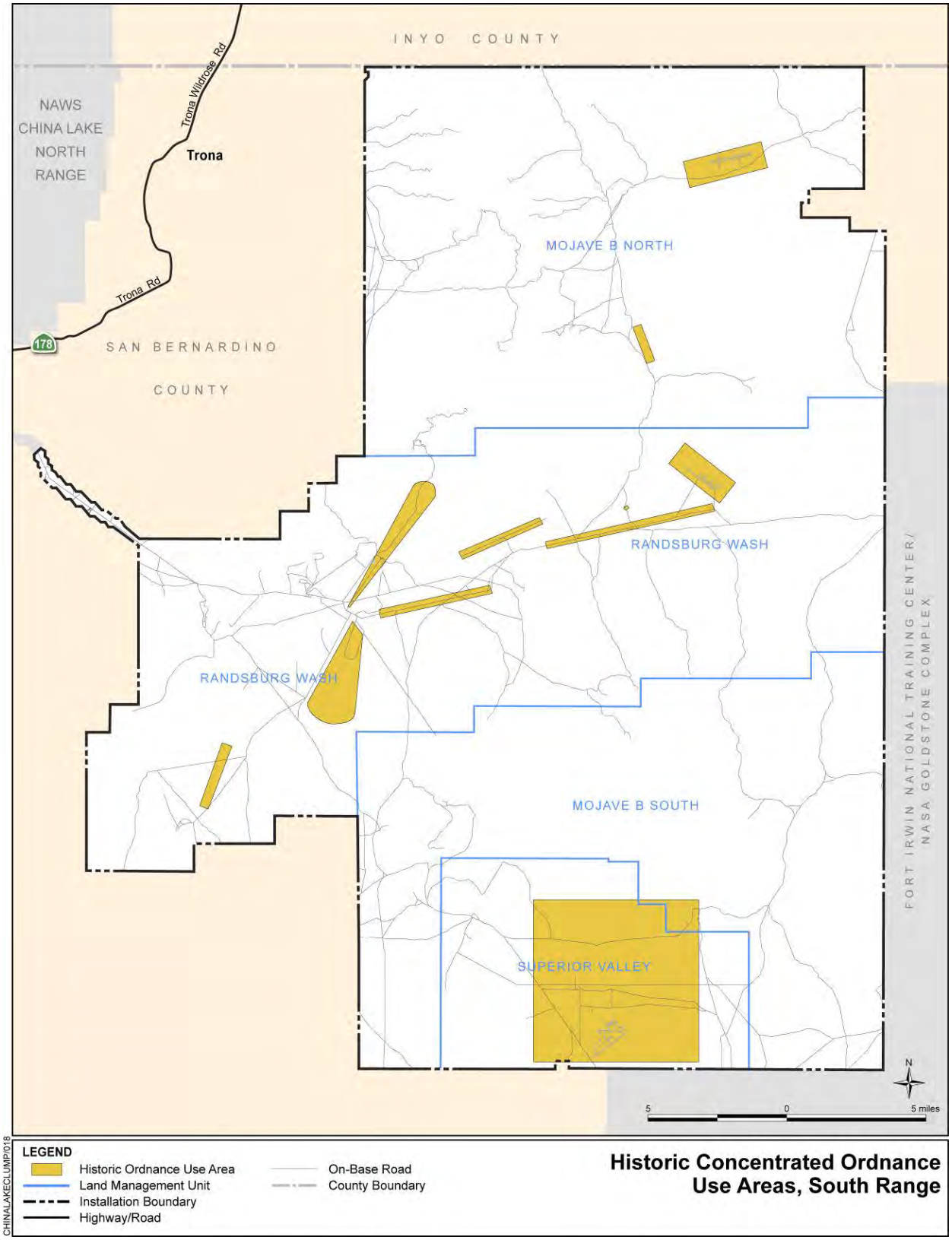


FIGURE 2-9 HISTORIC CONCENTRATED ORDNANCE USE AREAS, SOUTH RANGE



Range clearance of UXO from range test and training activities is a standardized part of NAWSCL range operations. The NAWSINST 8020.15 establishes policies and procedures for range access, such as UXO escort requirements. Explosives use must meet established test plans and standard operating procedures (SOPs). Debris and contamination from tests are removed from the ranges and test sites to the greatest extent possible and managed according to NAWSINST 8020.1 and current hazardous waste management procedures. Explosive ordnance disposal (EOD) and Range Ground Operations personnel perform this function.

The CLUMP formalizes established HE use on NAWSCL ranges (see Target and Test Areas, Appendix D).

2.4 Nonmilitary Land Use

Authorized nonmilitary land uses at NAWSCL include geothermal production, limited recreational opportunities, and scientific research and education projects. Most activities are accommodated on a case-by-case basis so that they do not interfere with military missions.

2.4.1 Education and Research Projects

Research and educational activities vary from year to year depending on the need or interest of researchers and NAWSCL environmental resources managers. Emphasis is placed on efforts that further the knowledge and understanding of the physical, natural, and cultural resources of NAWSCL lands and their relationship to the region and surrounding ecosystems. In addition, as a national renowned weapons research and development center, NAWCWD maintains extensive ties to academia and hosts continual access and collaboration activities at NAWSCL for a wide range of topics. Proposals for access related to research or education is considered on a case-by-case basis. Access for these activities must comply with the NAWSCL Range Access Policy (see Appendix E).

2.4.2 Recreation

Public access for recreational programs is conducted in accordance with installation objectives to promote and continue environmental resource conservation. The following discussion presents the current scope and status of recreational activities at NAWSCL.

1. **Hunting.** Chukar hunting is limited to a discrete area on the North Range with a limited number of escorted hunters. Hunts occur only during years when there is an abundance of chukar and are open to members of the military and public.

2. **Camping.** Camping is permitted on a case-by-case basis. Recreational camping requires a Command-approved escort trained in environmental, security, and safety issues. Before camping, the NAWSCL escort provides a briefing about NAWSCL safety and security, and protection of natural and cultural resources. Campers are limited to 16 individuals per night; installation safety and security measures are enforced.

3. **Hiking.** Hiking on existing roads will continue to be allowed. Hiking currently occurs on B-Mountain.

4. **Equestrian Use.** Equestrian use of G-Range Approach Corridor (south of Mainsite along the southern boundary of the North Range) is permitted on established dirt roads and trails

for informal use and during formal public events scheduled by BLM, provided such use does not conflict with mission requirements.

5. **Off-Highway Vehicle Use.** Authorized single-road crossing is allowed for OHVs at scheduled public events that cross the Randsburg Wash Access Road. The recreational use of the road crossing is approved and agreed upon and special events sponsored by BLM are conducted in accordance with Navy procedures.

6. **Petroglyph Tours.** Public access to Little Petroglyph Canyon is permitted on a case-by-case basis. Petroglyph tours are described in NAWSCL Instruction 5532.1, Use of Range Areas. Most tours are limited to Little Petroglyph Canyon (permission to tour other petroglyph areas is rarely granted because of difficult access and the high sensitivity of the art) and are conducted under a cooperative agreement between NAWSCL and the Maturango Museum in Ridgecrest. Museum-sponsored tours to Little Petroglyph Canyon are limited to 6 tours of up to 50 individuals each per month, with additional tours of smaller groups allowed. Additional tours of Little Petroglyph Canyon (not sponsored by the museum) are allowed on a case-by-case basis, provided the total number of individuals in the canyon at any one time does not exceed 75. These public tours are conducted by certified tour guides who are trained in NAWSCL safety and security requirements, including measures for protecting the rock art.

7. **Golf and Gym Access.** Access to the gymnasium and golf course is permitted for authorized members of the public. These facilities are located at Mainsite.

8. **Bird Watching.** The Audubon Society conducts annual bird counts (including the Christmas Bird Count, the Birdathon, and surveying birds of Indian Wells Valley [IWV]). Typical attendance is less than 20 people per event. Individuals make bird observations and record trends in bird populations. The Audubon Society's bird counts are allowed as annual events at NAWSCL.

9. **Photography.** Limited public photography, under conditions established by the Navy and at the Navy's discretion, would continue to be allowed. Generally, photography is allowed in areas associated with recreation permits (e.g., Birchum Springs, Renegade Canyon, and Little Petroglyph Canyon).

2.4.3 Commercial

A variety of commercial activities have been accommodated on NAWSCL lands over the past 60 years. While most of these activities will continue to be supported, others may be temporarily or permanently discontinued. The following list presents the current scope and status of commercial activities currently being accommodated at NAWSCL. These and other commercial activities will continue to be considered on a case-by-case basis.

1. **Geothermal Production.** Under the Military Construction Act of 1979, NAWSCL received authority for geothermal projects on acquired lands (Navy fee-owned lands). A Memorandum of Understanding (MOU) between the Secretary of the Navy and the Secretary of the Interior allows BLM to lease certain Navy-controlled lands within the Coso KGRA for commercial geothermal development, if compatible with the NAWSCL mission. Navy constraints on geothermal operations were incorporated by an amendment in 1980. Historically, the Navy has acted as the lead agency in developing environmental documentation for geothermal development projects on Navy-controlled lands within the

Coso KGRA. In March 1979, the Navy completed the final EIS for the Navy Coso Geothermal Development Program to evaluate the potential impacts of geothermal development. The first successful production well was completed in December 1981. The first power-generating unit was brought on-line in 1987, and the last unit was brought on-line in January 1990. Presently, there are four geothermal power plants, with nine 30-megawatt turbine-generator sets located within the Coso KGRA.

2. **Easements.** Easements will continue to be considered on a case-by-case basis and will be processed according to established Installation procedures among the Installation, the proponent, and BLM as appropriate.

3. **Leases and Licenses.** Land leases and license agreements are processed in accordance with NAWS Site Approval Instruction.

4. **Photovoltaic Solar Power Plant.** A 13.8-megawatt solar photovoltaic power system was constructed and went into operation in 2012 on a 118-acre (48-hectare) parcel at NAWSCL. The project site is within Mainsite east of Burroughs High School. The solar project consists of 31,680 high-efficiency solar panels and is expected to supply 30 percent of the Installation's energy needs through a power purchase agreement (PPA). The PPA allows the Navy to buy electricity at a discount from retail utility rates and reduce its costs by an estimated $13 million over the next 20 years.

2.5 Native American Access

Native American access to NAWSCL-administered lands is accommodated under an existing Memorandum of Agreement (MOA) signed in 1979 between the Navy and Native American tribes (U.S. Navy 1979). This MOA allows visitation to the Coso Hot Springs and Prayer Site areas, which are located in the Coso Geothermal LMU. Both locations are areas of interest for traditional and religious purposes, and are recognized as important Native American traditional sacred sites. The Hot Springs area had been developed and used as a resort by other groups in the past, but the buildings and facilities are now abandoned. In 1978, the site was listed on the National Register of Historic Places (National Register) as a multi-component historic and Native American resource. In 1979 and 2013, a Navy MOA granted access to the Hot Springs by the Owens Valley Paiute-Shoshones Band and the Kern Valley Native American Community for ceremonial activities eight times per year). As a result of Government-to-Government dialogue between the participating Tribes and the Navy by and through the NAWSCL Commanding Officer, a new MOA was developed in January 2014 to improve access to the Coso Hot Springs. The new agreement makes provision for increased access to Coso Hot Springs, by descendants of indigenous peoples that inhabited lands and/or conducted traditional cultural activities within the boundaries of NAWSCL, for the purpose of continued traditional cultural observances and practices. As of this writing, the new MOA has been signed by the Navy and one Tribe (Timbisha Shoshone).

2.6 Environmental Resources

NAWSCL lands contain a variety of physical, natural, and cultural resource features. The influences of topography, climate, history of human habitation, and land use over time have created the current landscape and environmental resource patterns. This section describes the general type of environmental resources found within the Installation's boundaries. Cultural resources at NAWSCL generally both include archaeological and historic resources. (Refer to

the ICRMP for a description of the NAWSCL Cultural Resources Management Program.) Natural resources include federally listed or otherwise federally protected species; other special status species not federally protected but warranting conservation consideration; water resources, including surface and groundwater resources; diverse wildlife habitats; and feral animals. (See INRMP for a more complete description of natural resources.)

2.6.1 Cultural Resources

"Cultural resources" is a generic term commonly applied to prehistoric and historic resources. Cultural resources at NAWSCL can include buildings, structures, sites, districts, and traditional cultural places. NAWSCL lands contain extensive and diverse cultural resources. The ranges contain sites dating back to 12,000 years before present and contain information relevant to understanding the evolution of prehistoric technology, habitation and subsistence, trade, and interaction as well as information related to the historic development of the region prior to the arrival of the Navy. A description of cultural resources occurring at China Lake and NAWSCL's approach to manage these resources may be found in the ICRMP (U.S. Navy 2012a).

Based on the NAWSCL cultural resources survey database as of January 2012, 181,106 acres (73,290 hectares) or more than 16 percent of NAWSCL, has been surveyed for cultural resources under Section 106 and Section 110. The areas surveyed on the North Range comprise 123,087 acres (49,810 hectares), or more than 20 percent of the range. The surveyed areas on the South Range comprise 58,018 acres (23,480 hectares), or approximately 12 percent of the range. These investigations have resulted in the identification of 3,406 prehistoric and historic archaeological sites. The majority of these resources are prehistoric (3,036 have been recorded, 183 are historic, 132 have both prehistoric and historic components, and 55 are unidentified). Past investigations have largely focused on surveys, with inventory efforts conducted under both Section 106 and Section 110. More recently, there has been increasing focus on evaluation efforts for both historic and prehistoric resources.

Archaeological Resources

NAWSCL contains two archaeological districts that are listed on the National Register: Coso Hot Springs and Coso Rock Art District National Historic Landmark (NHL) (U.S. Navy 2012a; U.S. Navy 2004). Coso Hot Springs was listed for its importance to Native Americans and for its historic buildings. The springs figure into Paiute and Shoshone legends (Brooks et al. 1979) and were believed to have medicinal properties. The Coso Hot Springs have been designated a Traditional Cultural Property (TCP) (U.S. Navy 2012a). The Coso Rock Art District achieved NHL status in 1964, and was, therefore, automatically listed on the National Register when the National Historic Preservation Act (NHPA) was passed in 1966. Encompassing 36,450 acres (14,751 hectares) and including 388 prehistoric sites that qualify as contributors to the district, the Coso Rock Art District is one of the largest rock art concentrations in North America (U.S. Navy 2012a). The Coso rock art panels, estimated to contain hundreds of thousands of rock art elements, are some of the most impressive in the country (Gilreath 1999).

Two additional archaeological districts were determined eligible for the National Register but are not formally listed: the Sugarloaf Archaeological District and Cactus Flat Village.

The Sugarloaf Archaeological District includes the Sugarloaf Mountain, West Cactus Peak, Joshua Ridge, and West Sugarloaf obsidian quarries, which were used extensively prehistorically. The district encompasses 44,160 acres (17,871 hectares) and includes 480 sites as contributing elements. Cactus Flat Village, a major habitation site with two loci, is within the

area encompassed by the Sugarloaf Archaeological District (U.S. Navy 2012a; U.S. Navy 2004).

Navy-Built Environment Resources

NAWSCL buildings and structures associated with historic activities supporting World War II and Cold War programs have been evaluated for eligibility for listing in the National Register. Significant events in the history of American weapons development have occurred at NAWSCL. Many buildings and structures from that period are still present and retain their historic integrity.

The built environment at NAWSCL includes more than 2,700 historic buildings and structures associated with Naval Ordnance Test Station; all of these resources have been evaluated (U.S. Navy 2012a). Of these, 214 have been determined eligible as an independent property or as a contributor to a district. Two historic districts are recommended eligible for the National Register: China Lake Pilot Plant and Salt Wells Historic District. The State Historic Preservation Officer (SHPO) concurrence was received by the Navy for a third district: the Senior Officers' and Scientists' Quarters District (U.S. Navy 2012a). NAWSCL has completed inventories for Mainsite, Armitage Airfield, and Propulsion Laboratories, and is currently preparing inventories for range facilities.

Native American Values and Historic-Era Significant Resources

Coso Hot Springs (CA-INY-475/H) is eligible for the National Register based on Native American and historic-era significance, and is a TCP used for sacred spiritual/religious ceremonies and medicinal healing purposes. The site demonstrates continuous use by American Indians from prehistoric times to present. The MOA between the Navy and the Coso Ad Hoc Committee, Owens Valley Paiute – Shoshone Band, and the Kern River Valley Indian Community, and the MOA between the Advisory Council on Historic Preservation (ACHP), California SHPO, and Commander of NAWSCL for the Navy Geothermal Development Program in the vicinity of Coso Hot Springs would continue.

2.6.2 Natural Resources

Natural resources at NAWSCL include wildlife habitats, plant and wildlife species, and plant communities. Wildlife habitats are the natural environments of animals, consisting of biotic features (plant and animal assemblages) and abiotic features (air, water, and temperature regime). Wildlife includes invertebrates, fish, amphibians, reptiles, birds, and mammals. Plant communities are assemblages of plant species typically defined by the dominant plant species within the assemblage.

Other natural resources include federally listed or otherwise federally protected species; other special status species not federally protected but warranting conservation consideration; water resources, including surface and groundwater resources; diverse wildlife habitats; and feral animals.

Details of natural resources occurring at China Lake and NAWSCL's approach to managing these resources may be found in the current NAWSCL INRMP and successor documents (U.S. Navy 2014).

Wildlife Habitat

Because of the region's varied topography and diversified habitats, wildlife on NAWSCL is rich and varied. Because of the relative scarcity of water in the desert, riparian areas and other water sources (even temporary seeps and ponds) tend to concentrate wildlife species, creating an oasis effect. Generally, these areas show the highest wildlife diversity for a given region and represent a valuable resource for wildlife.

Within floristic provinces, there is a variety of wildlife. Many species are wide-ranging (existing in all floristic provinces), while others are restricted to microhabitats within a particular plant community. Many of the more mobile species, especially larger mammals and birds, may use a variety of plant communities, even within a single day. Less mobile species, especially some invertebrates, reptiles, amphibians, and small mammals, may live their entire life cycles within a single plant community or even within a few square meters of habitat.

Invertebrate species surveys have been ongoing for the last 18 years and estimates that the Installation may support more than 7,000 species of invertebrates. There have been 1,833 species of spiders and insects documented on NAWSCL. The greatest diversity occurs in the Lepidoptera (441 species of moths and butterflies), Diptera (414 species of flies), Hymenoptera (362 species of ants, wasps, and bees), and Coleoptera (263 species of beetles) orders. Surveys have shown more than 80 species of butterflies occur at NAWSCL (U.S. Navy 1998). Although none of these butterflies are federally listed or otherwise federally protected, nine are considered unusual due to their limited distribution (U.S. Navy 1998). In addition, a large number of invertebrates exist within the playas and can emerge during periods of standing water after rains. While these habitats support many smaller invertebrates, the most obvious are the larger branchiopods, such as several species of fairy shrimp, including giant fairy shrimp (*Branchinecta gigas*), tadpole shrimp (*Lepiduras lemmoni*), and brine shrimp (*Artemia frandscana*) (U.S. Navy 1996).

There are more than 120 springs, two seeps (i.e., pools formed by water slowly percolating to the surface), and approximately 20 constructed ponds on NAWSCL. However, only five fish species occur on the installation; one of which is listed as federally endangered.

Although the desert is characterized as an arid environment, there is enough moisture associated with naturally and artificially occurring water sources to support amphibious species. Amphibians are generally secretive, remaining underground or beneath debris near water; are often active only at night; and usually are confined to permanent water sources.

Thirty-four species of reptiles have been identified at NAWSCL, including a variety of lizards and snakes, one of which is federally listed as threatened. The federally threatened desert tortoise (*Xerobates [Gopherus} agassizii*) occurs on the Installation on both the North and South Ranges in high densities in suitable habitat, but with relatively higher densities on the South Range.

To date, more than 350 different bird species, including the federally threatened Inyo California towhee (*Pipilo crissalis eremophilus*), have been identified on NAWSCL. The majority of birds occurring at NAWSCL are migratory species. Some of the bird species identified as common or fairly common at NAWSCL (Blue and Moore 1995) are described for the following habitat types: desert scrub, alkali sink, scrub woodland, riparian, wetland/ponds, and disturbed.

NAWSCL ranges support more than 80 mammal species. Fourteen bats have been identified, including seven species of Myotis as well as the western pipistrelle (*Pipistrellus hesperus*), big

brown bat (*Eptesicus fuscus*), spotted bat (Euderma maculatum), Townsend's big-eared bat (*Corynorhinus townsendii*), pallid bat (*Antrozous pallidus*), Mexican free-tailed bat (*Tadarida brasiliensis*), and western mastiff bat (*Eumops perotis*).

Federally Listed Threatened, Endangered, and Special Status Species

Three wildlife species formally listed by the U.S. Fish and Wildlife Service (USFWS) are resident species on NAWSCL: Mohave tui chub (*Siphateles [Gila} bicolor mohavensis*), desert tortoise, and Inyo California towhee. In addition, several nonresident threatened or endangered bird species occur on-installation as transients or migrants.

There are currently no known occurrences of federally listed threatened or endangered plant species on NAWSCL. However, some areas of the Installation contain habitat that could support such listed species. One noteworthy example is the Lane Mountain milk-vetch (*Astragalus jaegerianus*) that was listed as an endangered species by USFWS on 6 October 1998 (USFWS 1998). This species has been identified approximately 4 miles (6.4 kilometers) south of NAWSCL. Potential habitat is located on the South Range in Superior Valley and on the gentle slopes bordering the valley (Bagley 1986). Focused surveys have been conducted in this area of the Installation, but no occurrences of the Lane Mountain milk-vetch have been confirmed to date.

Water Resources

Water resources at NAWSCL include surface water features, such as springs and seeps, playas, ephemeral drainages, and groundwater. Groundwater is the sole source of potable water at NAWSCL, while springs, seeps, and associated riparian areas are important sources of water and habitat for a wide variety of wildlife on Installation lands. The groundwater resource on NAWSCL lands and the adjacent IWV depends on recharge originating in the Sierra watershed to the west of the Installation boundary.

Indian Wells Valley Groundwater Basin Characterization

IWV is located east of the southern Sierra Nevada. Average annual precipitation in the valley is 2 to 5 inches, although some years there is none. Surface elevation in the central IWV ranges from 2,150 to 2,400 feet above sea level. The Sierra Nevada bounds the basin on the west, the Coso Range on the north, the Argus Range on the east, and the El Paso Mountains on the south. China Lake, Mirror Lake, and Satellite Lake are playa lakes located in the east-central portion of the valley and are the primary surface water and groundwater discharge points.

Hydrogeologic Information. The base and sides of the basin are of late-Cretaceous igneous and metamorphic rocks of low permeability, except in crushed zones. The lower-most alluvial materials are of early Tertiary age, consisting of the Goler Formation. The Goler Formation is a compact, dense formation of mostly grus and alluvium derived from the basement rocks. The Ricardo Formation and Rose Springs Formations are lacustrine beds containing pyroclastic materials and minor volcanics. These are all quite compact and have low storage capacities. The valley floor dropped notably in Pliocene time and these materials began to wash into the depression.

Most groundwater within the IWV is contained in the Pliocene and Pleistocene alluvial beds. A lower alluvial formation is dense and compact, probably of Pliocene or early-Pleistocene age. This material does not transmit water well. A major portion of this formation is exposed in

contact with the igneous basement where State Highway 14 enters the southwest side of the valley to where State Highway 178 meets State Highway 14.

More recent sediments fill space in the floor of the valley. These are of Quaternary age, mainly Holocene. Near the mountains, they are composed of debris flows and fanglomerates. These have very low storage coefficients. The particle size of the components decreases toward the central part of the valley where the storage coefficients increase to about 25 percent.

Lacustrine clays are widespread especially in the central and eastern portions of the valley. The clays are poorly permeable and have storage coefficients of less than 1 percent. These discontinuous clay beds are spread throughout the depths in the central part of the valley. Locally, they confine the aquifer by decreasing the mobility of the water. Intercalated with the clays are some poorly interconnected pods of high permeability and high storage capacity beds consisting of aeolian sands and slope wash material. On the northern end of the valley, beds of pumice and a few intercalated basaltic lava further spoil the continuity of the aquifer.

Before intensive pumping began, a layer of about 200 to 300 feet of high quality water was deposited on beds of clay since the last glacial stage. In many places such as the southeastern part of the valley, this water has been almost entirely removed by pumping. Lower quality water is usually found in and beneath the clays. Where glacial lakes did not exist, the sediments contain excellent water to depths in excess of 1,000 feet. This condition has given rise to the oversimplified concept of two different aquifers but depends more upon the well depth, condition of the well, and the size and power of the pump. Pumping rates in excess of 2,000 gallons per minute are possible in some areas.

Restrictive Structures. IWV is a structural graben produced by faulting. The deepest area of the valley (based on drilling data) is in the west-central area with basement encountered at approximately 6,500 feet below land surface. The basement is tilted upward towards the east.

A number of faults crisscross the valley. Many of these are north-south-trending structures that are drag-folded into the east-west trend of the Garlock fault. None of these faults appear to have much effect on the groundwater flow, except for the western-most, unnamed fault that trends diagonally along the west side of the valley from Highway 178 which displaces older sediments upward on the western side and the Little Lake Fault Zone that displaces local sediments. The northwest-southeast-trending Little Lake Fault Zone abruptly separates the shallow aquifer from the deep aquifer in the areas south of Armitage Airfield at NAWSCL.

Groundwater Recharge. The conventional conceptualization of the IWV aquifer system has inflow composed of mountain front recharge from the Sierra Nevada, minor contribution from other bounding highlands, and perhaps a modicum of inflow on a continuing basis as underflow from Rose Valley in the northwest, which represents the entry point of the ancestral Owens River.

Sources of recharge and flow paths established in the Pleistocene are no longer active but still may have established preferential pathways. During wet pluvial times, the IWV was an open basin for both surface water and groundwater. During the much drier Holocene and more recent times, however, most of the major sources of recharge have been reduced or diminished, and leakage downstream diminished as the basin becomes more restrictive for groundwater movement. Recharge into the valley comes principally from precipitation in the Sierra Nevada. This Sierra Nevada recharge enters the groundwater system primarily as mountain-front recharge, as infiltration to alluvial aquifers along the margins of the basin, as infiltration through

fractured rock of the adjacent highlands, and through sediments in the ancestral drainage of the Owens River (Little Lake Gap). Some of the groundwater must discharge by moving out of the basin through the surrounding bedrock terrain.

Extensive isotope verification of the water types has yet to be performed; however, data from the recent Assembly Bill 303 project indicates that shallow groundwater and the few recharge samples in the basin are consistently of Holocene Age (<10,000 years before present [ybp]) while the ages of the deeper groundwater in the basin are generally between 10,000 and 40,000 ybp. Good groundwater quality in the southwestern portion of the valley may provide evidence that these are younger (possibly Holocene) waters that originated in the higher elevations of the Sierra Nevada. A few wells completed in the deeper hydrologic zones indicate the potential for poorer quality groundwater at depth in certain areas.

Significant drawdown in the regional aquifer is occurring at a rate of 1 to 1.5 feet per year, particularly in the eastern and east-central portion of the basin, and the possibility exists of drawing poorer quality groundwater from the eastern portion of the basin or deeper zones. These groundwater declines indicate that recharge is lagging behind or insufficient to replace losses associated with groundwater production. Water quality varies depending on where it is found within the basin. The quality is generally good along the margins and in the southern portion, where recharge to the basin fill has been more recent. In the center and eastern portions of the basin, however, water quality has been degraded by long residence times and past and present evapoconcentration of solutes.

Widely accepted estimates of valley recharge from mass balance calculations and inflow simulations range from 6,500 to 11,000 acre-feet per year (AFY) (Berenbrock and Martin 1991). Discharge processes are typical of arid closed basins, including: evapotranspiration (ET) by desert vegetation near the playa and from agricultural crops, domestic lawns and trees, evaporation of both shallow groundwater and rare playa lake free standing water, and withdrawal by pumping. Since 1920, pumpage of groundwater has increased from 1,000 to 27,000 AFY with no significant change in recharge (Berenbrock and Martin 1991; Brown and Caldwell 2009). Lee (1912) estimated ET at 11,000 AFY while improved estimates with aerial photography, satellite imagery, and maps of moist area and phreatophytes around the playa still place the ET near 10,000 AFY (Berenbrock and Martin 1991; Brown and Caldwell 2009). The last year that annual natural recharge exceeded total pumpage was 1959, and water levels have declined steadily as population and associated institutional, industrial, and agricultural activities have increased. By 2009, pumping exceeded recharge estimates by more than 20,000 AFY (Brown and Caldwell 2009).

Two recent (December 2013) groundwater model simulations completed by the Navy predict groundwater levels (through 2057) using 2012 water production numbers, including 13,500 acre-feet of new agricultural water consumption. The model simulations predict water levels decreasing by over 4 feet per year in the areas adjacent to agricultural water production, which would impact many domestic wells in the area. The model results also show coalescing cones of depression and groundwater gradient changes within the next 15 years. The recent active agricultural development includes almost 3,000 acres (1,214 hectares) of land on scattered plots bounded by Highway 395 to the south, the Inyo County line to the north, Highway 14/395 along the west, and adjacent to Brown Road along the eastern perimeter. All the recently developed land is located within Kern County. The Kern County Planning Department finished their Water Availability and Conservation Report in January 2014 (Todd Engineers 2014). The report compiled information from existing publications and formulated hydrogeologic concepts as well as future planning options for the IWV. NAWSCL is working with the other Stakeholders,

including the County of Kern, to implement a plan for maximizing/enhancing the regional aquifer within the IWV. That cooperative plan should be finalized in spring/summer 2014.

More than 120 permanent and seasonal springs have been identified at NAWSCL. These springs range from small areas with almost imperceptible discharge to areas supporting extensive riparian vegetation. Another source of surface water occurs in the Lark Seep and G-1 Seep system, created primarily by leakage and percolation from the city of Ridgecrest's wastewater treatment facility located on Installation lands. These seeps support the Mohave tui chub population.

Feral Horses and Burros

NAWSCL will continue to actively manage feral horses and burros according to the established objectives described below and in the Installation's INRMP. Burros and horses were introduced on the Installation and surrounding lands by miners and ranchers in the late 1800s. The number of feral horses and burros increased dramatically between the late 1960s and early 1980s, causing significant environmental damage, as well as safety concerns for aircraft operations and motorists on Installation. Since that time, a formal management program has been in effect, and to date more than 9,500 burros and 3,280 horses have been removed from the Installation at Navy expense. The animals have been placed in the cooperative adoption program with BLM. The Navy's management objectives for feral animals are to completely remove burros from Installation lands and to maintain a wild horse herd of approximately 170 animals. Horse and burro management is a cooperative program conducted in partnership with BLM.

2.6.3 Public Health and Safety Programs

The safety programs at NAWSCL encompass all types of RDAT&E activities, including flight safety; ordnance handling, transport, and disposal; laser safety; and procedures for firing solid rocket motors. In addition, a personnel safety program is in place to ensure that employees understand the hazards of working on range property. Safety rules have been established to control range access, delineate danger areas, and educate the work force about range hazards. The following are some of the safety programs and hazard types:

- **Height Restrictions and Imaginary Surfaces.** Restrictions are placed on the height of on-station structures that could obstruct or interfere with aircraft arrivals and departures at Armitage Airfield.

- **Accident Potential Zones (APZs).** Specific areas are designated and controlled near the ends of runways where potential risk for aircraft accidents and mishaps is higher.

- **Tracking of Aircraft Incidents.** Strict reporting requirements, historical tracking, and analysis of aircraft incidents and accidents are used to identify sources of hazards and influence the development of new flight rules and SOPs to increase flight safety.

- **Electromagnetic (EM) Interference and Hazards of Electromagnetic Radiation to Ordnance.** Potential sources of EM radiation that could interfere with the functioning of aircraft systems and ordnance are monitored and restricted throughout the ranges.

- **Bird/Aircraft Strike Hazard (BASH).** Strategies are developed and implemented to reduce the presence of birds in the immediate vicinity of the airfield to reduce the likelihood of bird/aircraft collisions.

- **Smoke and Dust**. Land use planning and control strategies are developed to discourage land uses that generate large quantities of dust, smoke, or other airborne emissions that can impair visibility on the range.

This page intentionally left blank.

3.0 LAND USE MANAGEMENT

The CLUMP offers a long-term strategic plan that formalizes corporate processes for land use planning and management at NAWSCL. The minor land use changes that would result from a decision to increase military operations are reflected in this CLUMP Update. This plan provides an integrated structure for the management of military operations, public health, safety practices, and environmental resource conservation programs. The CLUMP reflects the integration of range management strategies and management guidance from the Installation's INRMP and ICRMP.

3.1 Management Strategy

The CLUMP employs a straightforward strategy to guide and direct the land use management process at NAWSCL. This strategy capitalizes on the use of existing information, planning processes, and augments these capabilities with enhanced information management and the integration of process improvements. The CLUMP land use management process includes the following steps to support mission requirements:

1. Control and direct ongoing and new land use to meet mission requirements and avoid or minimizing adverse effects to protected or sensitive environmental resources using a data driven decision process based on the National Environmental Policy Act (NEPA).

2. Enhance land use management by integrating environmental, facilities, safety, security, and test planning processes.

3. Continue to monitor land use and environmental resource conditions to determine the results of ongoing use and the effectiveness of management processes.

4. Use Regional Shore Information Management System/Geographic Information System (RSIMS/GIS) for management of facility and operational land uses and environmental resource data.

5. Make informed process adjustments as needed over the term of the plan.

The CLUMP will continue to accommodate the Navy's land use needs by implementing an integrated process using the following general strategies to accomplish the land use management goals at NAWSCL:

1. Continue to direct military operations and nonmilitary activities to established land use locations.

2. Locate new uses or changes to existing ground-disturbing activities, whenever possible, to currently approved underutilized areas or to areas that are not environmentally sensitive.

3. Continue to implement impact avoidance and minimization practices for ongoing and new land use in, or adjacent to, protected and/or sensitive environmental resource areas.

4. Continue to apply a clearly defined environmental review and approval process for ongoing and new land use, per Section 4.3.

5. Accommodate nonmilitary use on a case-by-case basis in locations that are compatible with the military mission.

6. Continue to inventory environmental resources and monitor land use effects in accordance with Navy directives and best management practices.

7. Maintain and update baseline data concerning land use, environmental resources, and other appropriate features, as needed to support land use management processes. Develop a NAWSCL data management plan for the development, storage and retrieval of land use and environmental resource features.

8. Pursue appropriate partnerships with agencies, academic institutions, and organizations to augment environmental resources research and management efforts.

9. Implement a CLUMP amendment process to review the CLUMP every year and periodically update the plan in response to evolving management requirements.

10. Continue coordination efforts with interested off-installation agencies and organizations and maintain participation in mutually beneficial land use and environmental planning and management initiatives.

3.2 Land Management Framework

The CLUMP combines land use and environmental resource descriptions (Chapter 2) with the management goals and direction provided by applicable management plans to create the baseline conditions for the land management framework. These land use and environmental resource conditions are mapped using GIS technology to create an accessible and shared corporate database delineating land use and environmental resource management areas. These management areas create the framework upon which new land use proposals or significant changes to existing activities will be compared. Proposed land use (continuing or new) will be analyzed to determine conformity to the NAWSCL CLUMP and the 2014 FEIS Record of Decision (ROD), subsequent approved NEPA documents and compatibility with existing military land use. The CLUMP land use decision process is further described in Chapter 4.

3.2.1 Land Use Areas

Land use management at NAWSCL is framed around an understanding of activity requirements and their desired location, environmental resources, and the potential impact and effect that the activity may have on the resources or that the presence of resources may have on the activity.

As described in Chapter 2, the land at NAWSCL has been identified in terms of management units that support designated activities as defined by function. The LMU construct recognizes that NAWSCL lands are not homogenous; some possess larger amounts of natural and/or cultural resources or contain resources that are recognized as sensitive and, therefore, receive higher natural and cultural resource management attention and oversight priority. In addition, the intensity of activity impact is considered in the framework of land use management decisions. For example, ordnance or industrial use is a common activity in some LMUs while it is very limited or non-existent in others. Figures 3-1 and 3-2, Land Uses, illustrate the land use patterns described in Chapter 2.

FIGURE 3-1 LAND USES, NORTH RANGE

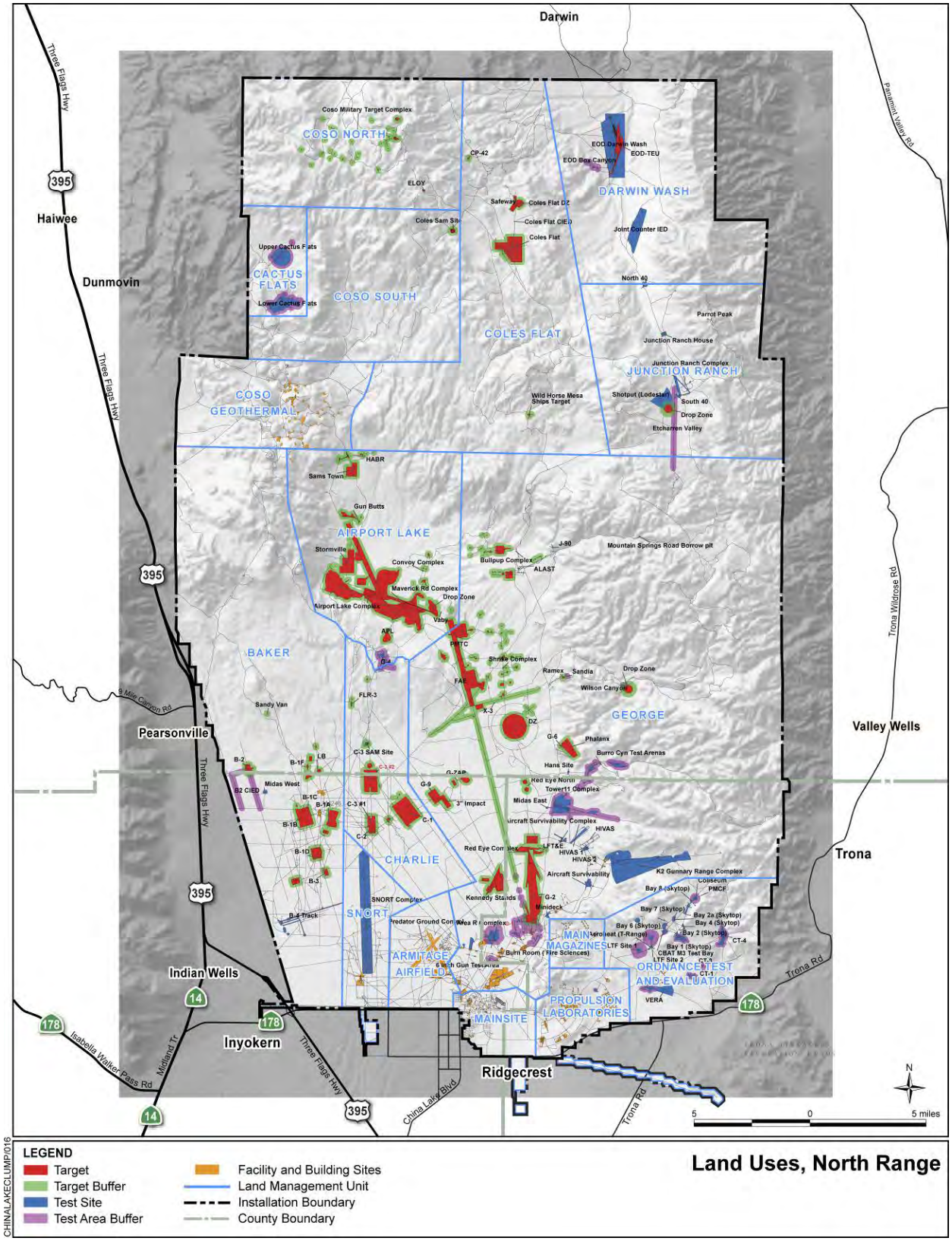
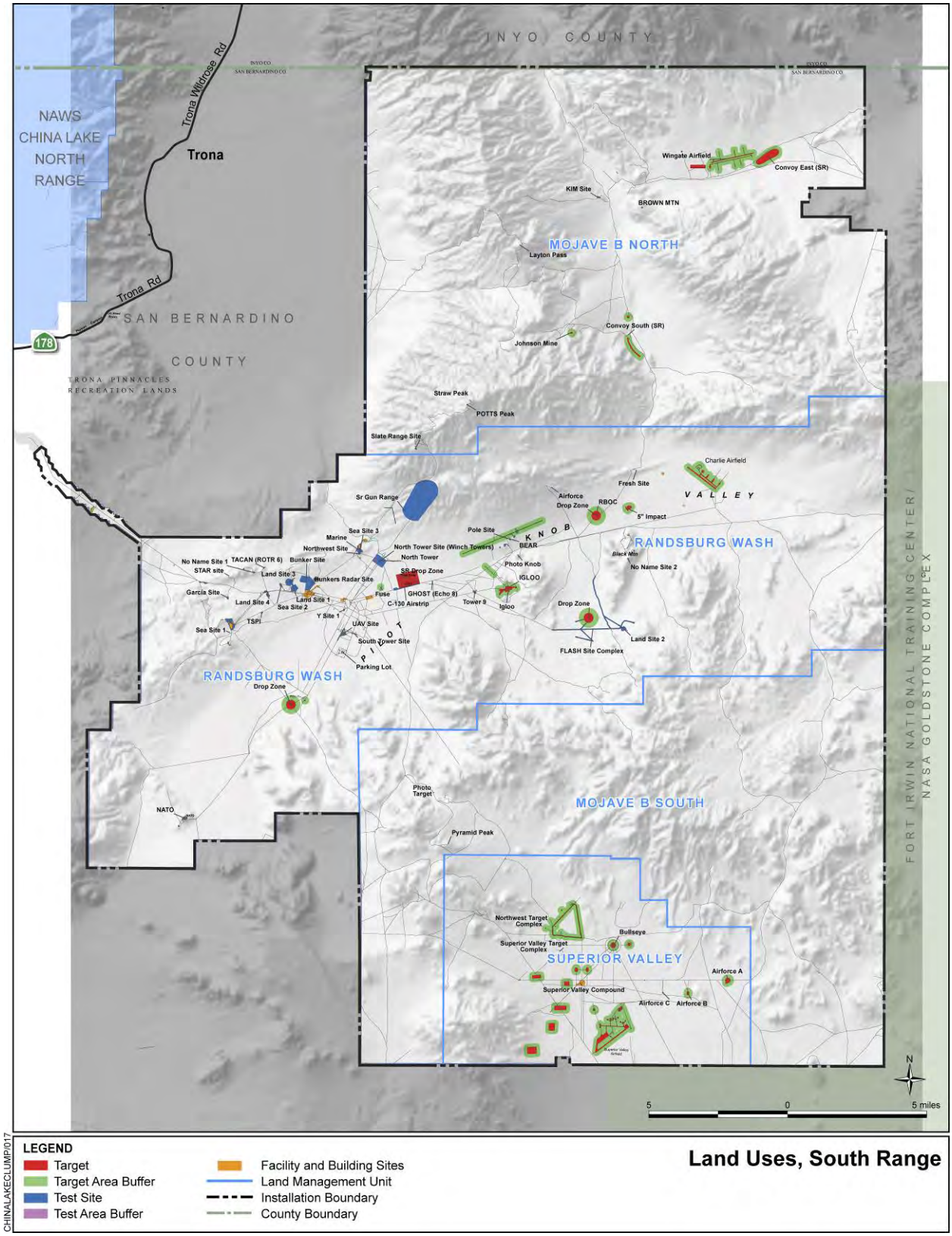


FIGURE 3-2 LAND USES, SOUTH RANGE



The physical condition of the ground surface also plays an integral part in land use management decisions. Generally, the physical condition of the ground is characterized as either highly disturbed and void of naturally occurring features (test and target sites, instrumentation sites, roads, certain public utility easements, etc.), buffer zones (typically a 200-meter area surrounding test and target sites), and areas that have minimal or no surface disturbance.

In addition to use intensity and physical condition, natural and cultural resource management requirements also comprise a portion of the land use management framework. Generally, natural and cultural resources, as they relate to the CLUMP, are prioritized for management consideration as follows:

Natural. Conservation of federally listed species and their associated habitat, surface waters including springs and riparian areas, and management of feral horse and burro populations are the top management priorities at NAWSCL. Special status species and habitat that is defined as sensitive in the INRMP are the next management priority followed by generally undisturbed natural habitat and finally heavily disturbed areas. Figures 3-3 and 3-4 illustrate the location of the listed species habitats at NAWSCL.

Cultural. Resources that have been listed in the National Register, determined to be eligible for listing, or have been determined as significant related to historical context are the top priorities at NAWSCL. Areas that have not previously been inventoried are assumed to contain historic properties and unevaluated sites are treated as eligible until an evaluation can be completed. Resources that have been determined ineligible for listing or areas that are so heavily disturbed that intact resources cannot be identified are the next management priority.

It is important to acknowledge that management priorities could change based on additional information or a resource status change as determined by a regulatory organization. For detailed descriptions and management plans concerning natural and cultural resources, refer to the Installation's INRMP and ICRMP. For the most up-to-date information concerning resource locations and their status', refer to the Environmental Management Divisions *ArcGIS* database.

Finally, the following general considerations are incorporated into land use management decisions and round out the various elements that make up the NAWSCL land use management framework:

1. To the greatest extent possible, locate all activities (military and nonmilitary) in established land use areas according to function and supportability.

2. Identify and implement applicable and feasible mitigation measures in land use management decisions.

3. Monitor and assess activity impacts on resources in order to make land use decision adjustments when required.

4. Inventory, evaluate, and enter Installation-wide resource information into a reliable, accessible, and user-friendly repository (currently NAVFAC GRX or GIS) for use in the land use management decision process.

5. Coordinate with and consider the strategies and initiatives of external agencies, organizations, and interested stakeholders when making land use management decisions.

6. Apply the Installation's environmental review process to assist in land use management decisions.

Cultural Resource Management Areas

Cultural resource management areas presented in this CLUMP are based on the current state of knowledge regarding cultural resources at NAWSCL. As our knowledge of these resources increases, these priority areas may change to reflect new data. The ICRMP for NAWSCL summarizes the existing cultural resources inventory, provides an historic context by which to evaluate resources for the National Register, identifies resource management goals and priorities, and describes the procedures to meet these goals. Figures 3-5 and 3-6 indicate the areas surveyed and provide a general illustration of the cultural resources occurring on NAWSCL, including areas that have been listed or recommended as eligible for the National Register.

Cultural resources located within target and buffer zones receive impacts associated with use of these areas. These impacts include weapons impacts, test preparation, and camera and monitoring equipment placement (U.S. Navy 2012a). Cultural surveys of target and test site buffers are expected to be completed in fiscal year 2018. Currently, nearly 71 percent of the North Range and approximately 93 percent of the South Range target and test area buffers have been investigated for cultural resources. Approximately 29 percent of the North Range buffers and 7 percent of the South Range buffers have not been surveyed. Numerous prehistoric and historic archaeological sites (364) are currently known to be in these buffers. As of December 2013, National Register evaluations have been conducted for 102 sites in target and buffer areas. Evaluations have occurred in Superior Valley, Airport Lake, Baker, George, Cole's Flat, Charlie, Armitage Airfield, and North Coso LMUs. An additional 61 sites located in the Cactus Flats and Airport Lake LMUs are currently undergoing evaluation. In 2014, additional sites located in George, Baker, and Charley LMUs will be evaluated. Any ground-disturbing activities, for example, ground-to-ground or air-to-ground ordnance test incidental impacts, debris scatter, placement of camera stands and test monitoring equipment, and UAS launch and retrieval (including driving off-road), have the potential to impact or affect cultural resources (U.S. Navy 2012a).

3.3 Land Use Management Objectives and Planned Actions

Land use objectives and guidelines contained in this section describe NAWSCL's approach to achieving the land management goals established in Chapter 1. The land use management objectives and guidelines were developed through consultation with participating technical staff from applicable management plans referenced in Section 1.10. These guidelines were developed in accordance with the Installation's land use management policies as noted in Section 1.5. Objectives and guidelines are presented in this Section for all referenced land use management goals except Goal No. 2, *Improve the efficiency of land use management practices*, which is addressed in Chapter 4.

FIGURE 3-3 LISTED SPECIES HABITATS, NORTH RANGE

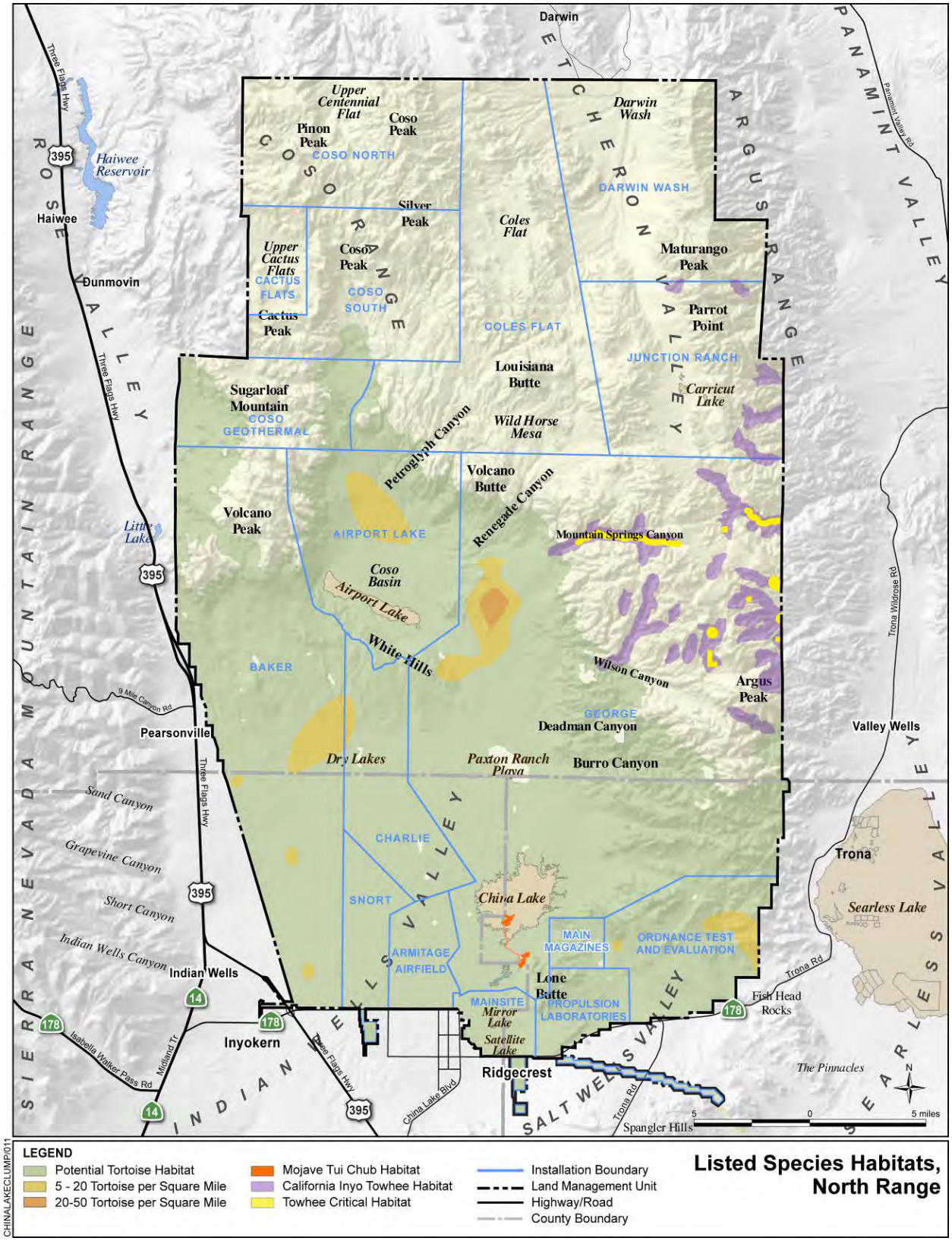


FIGURE 3-4 LISTED SPECIES HABITATS, SOUTH RANGE

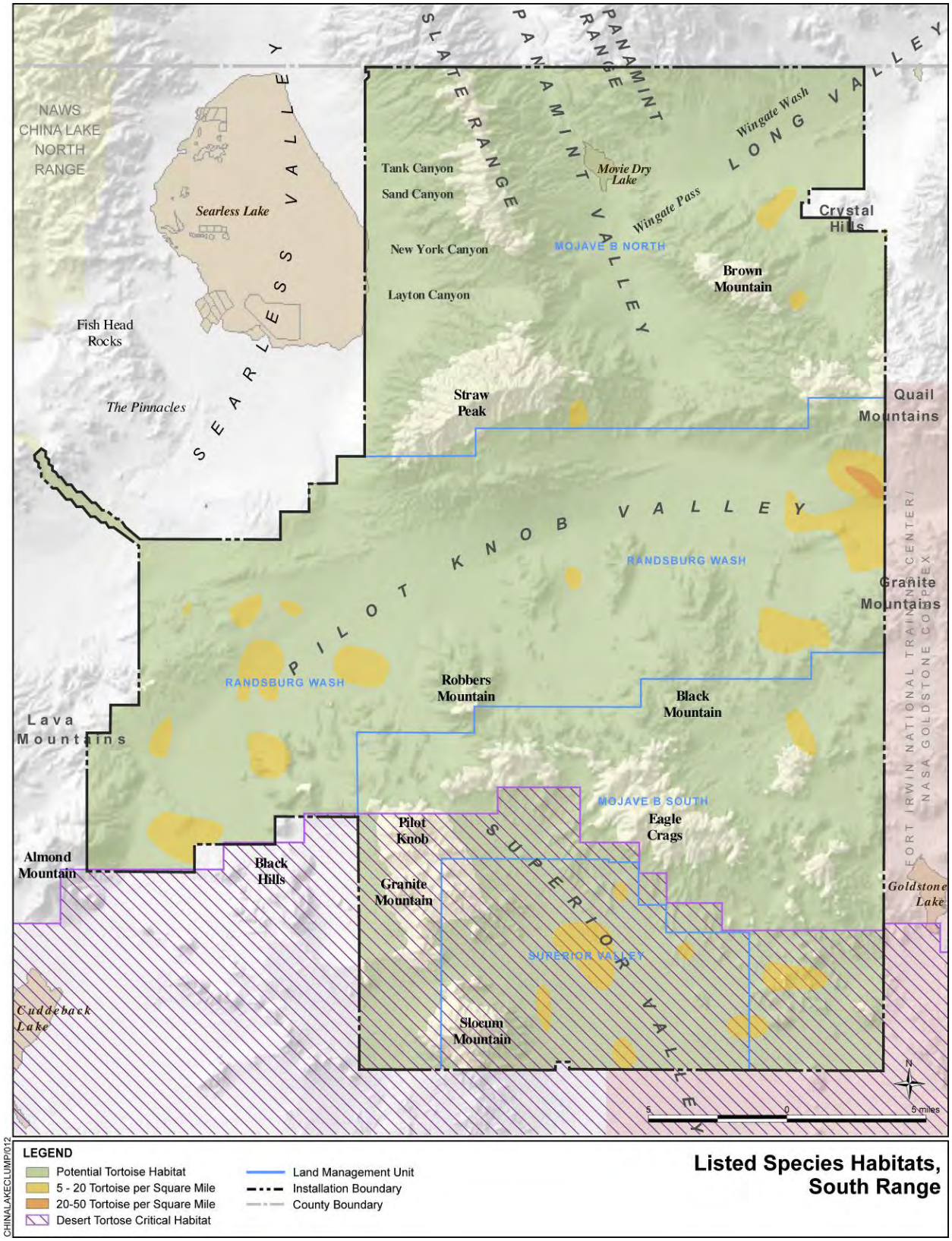


FIGURE 3-5 KNOWN DISTRICTS AND SURVEYS, NORTH RANGE

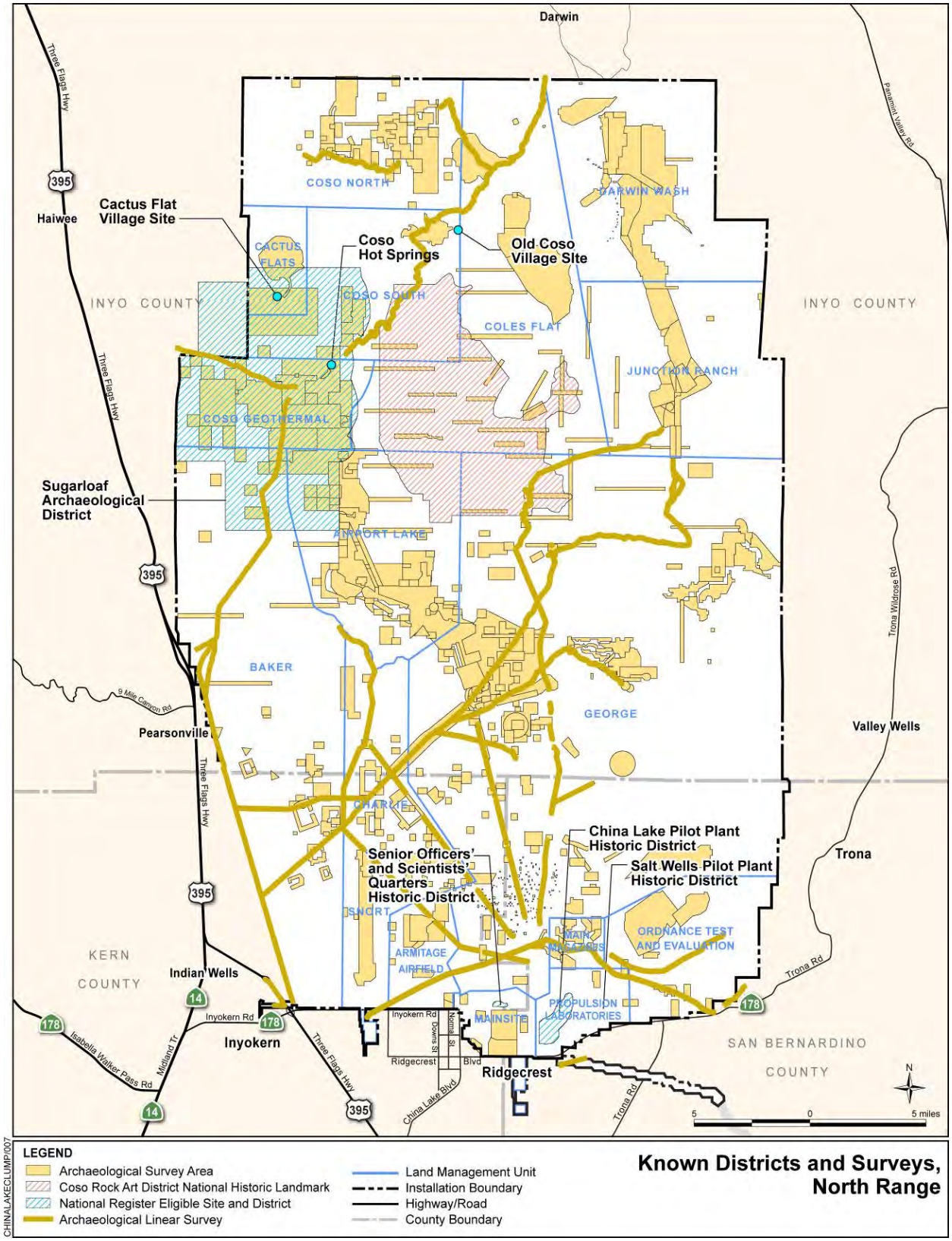
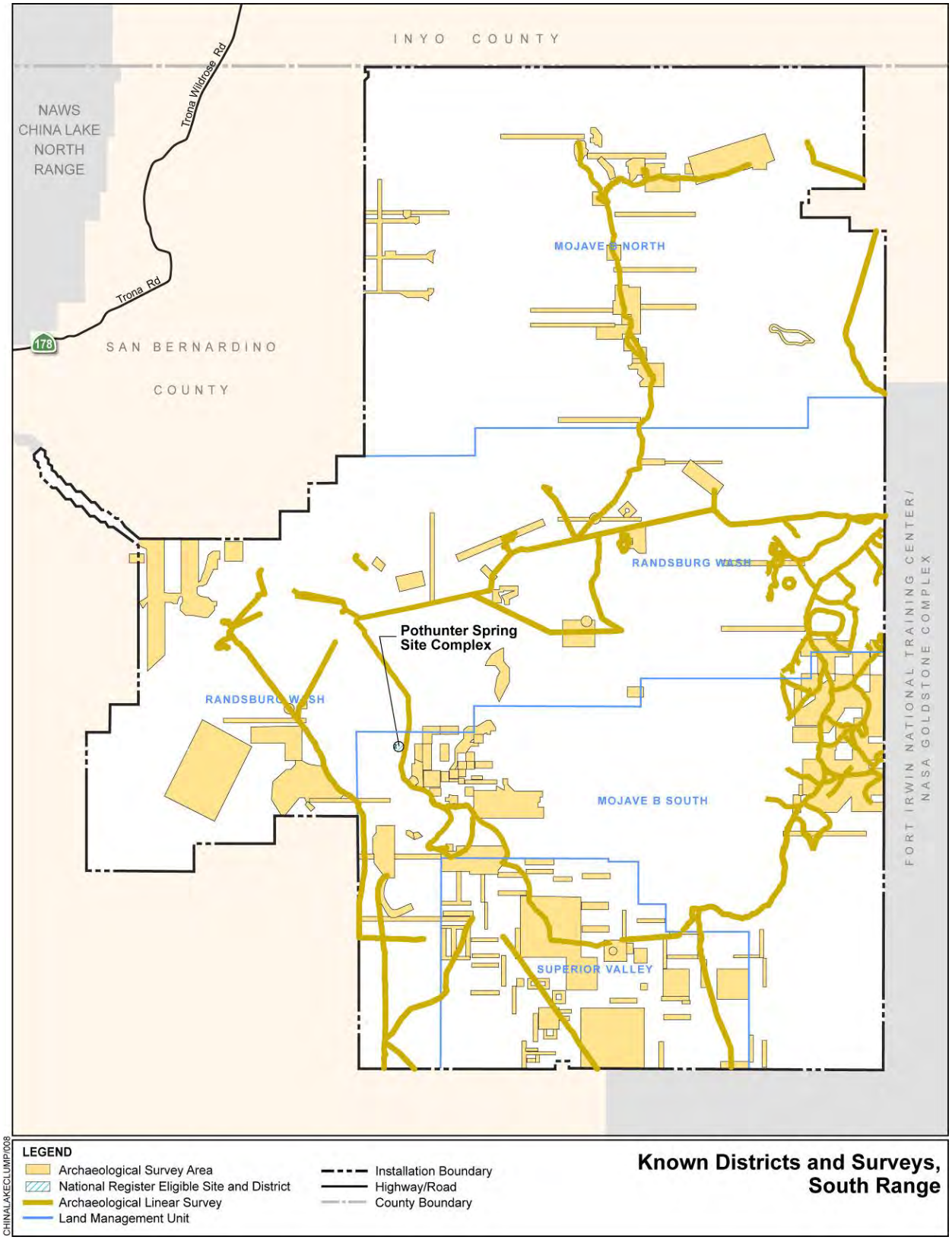


FIGURE 3-6 KNOWN DISTRICTS AND SURVEYS, SOUTH RANGE



3.3.1 Military Land Use

The following objectives and guidelines address the military land use goals described in Section 1.3 and were developed in accordance with the Installation's policy that "all NAWSCL lands, whether held in fee simple or withdrawn from the public domain, are dedicated to meeting current and evolving Navy/DoD missions." NAWSCL policy advocates the placement of continuing and evolving military land uses, to the extent practicable, in areas where existing ground disturbance occurs to fully utilize existing operational areas and minimize potential effects to sensitive resources.

CLUMP Goal No. 1: Maintain and enhance core RDAT&E, training and support capabilities.

Support Operations: Includes ongoing and emerging activities at Mainsite, airfield, ordnance storage magazines, the propulsion laboratories, and the ranges.

Objective 1-1: *Maintain and enhance existing and proposed facilities and infrastructure to meet current and evolving mission needs while complying with environmental requirements and ensuring military operational readiness.*

Planned Actions

1. Locate new facilities within existing facility footprints or other previously disturbed areas to the extent practicable.

2. Coordinate all facilities sitings, relocations, expansions, or changes in use using the NAWSCL Site Approval process via the Project Review Board (PRB) and/or the Operation Environmental Review Board (OERB).

3. Demolish excess and/or substandard facilities and reclaim landscape to standards defined in the Activity Overview Plan (AOP) (or applicable reclamation standard).

4. Review proposed new uses or alterations to existing buildings or structures, via the PRB, to determine the eligibility of affected structures for National Register contributing elements. Analyze for potential impacts in accordance with guidelines established for National Register-eligible buildings.

5. Conduct appropriate environmental surveys on any proposed new land use within an undeveloped area to identify sensitive natural and cultural resources, environmental resources, and IRP sites (hazardous waste cleanups).

Range Operations: Includes ongoing and emerging range use for military RDAT&E and training activities.

Objective 1-2: *Develop and promote improved land range capabilities.*

Planned Actions

1. Increase test and training realism though more realistic operational scenarios (i.e., night operations, countermeasures, global positioning system (GPS) jamming, operating over a

broader environment—desert, mountains), simulations, target augmentation, and linkages with other services and ranges.

2. Pursue additional military use for the range that is compatible with the primary RDAT&E mission.

3. Increase capability to schedule combinations of sub-ranges to support complex tests or exercises with large footprints.

4. Maintain and enhance EM capabilities at the Electronic Combat Range in the Randsburg Wash Management Unit.

Objective 1-3: *Maintain capability to safely conduct test and training activities using live ordnance.*

Planned Actions

1. Maintain and enhance dedicated target and test areas utilization with controlled access and restrictions on adding incompatible functions.

2. Continue policies and practices to direct the use of HEs to designated target and test sites and accommodate tempo increases in response to customer needs.

3. Continue policies and practices to remove unexploded ordnance and range residue from ranges and test sites, to the extent possible, to avoid interference with acquisition of test data and to ensure the safety of personnel during test preparation and post-test recovery of test items for analysis.

Objective 1-4: Modernize and expand networking capabilities, inter- and intra-range.

Planned Actions

1. Incorporate new technology compatible with all range-user requirements.

2. Link open-air range testing with laboratory facilities and personnel.

3. Link with other DoD test and training ranges to support RDAT&E of long-range weapon systems, enhance realism, efficiently use test resources, and enhanced Fleet training.

4. Develop a phased plan to establish maximum instrumentation and communications coverage to appropriate portions of the ranges.

Objective 1-5: *Expand combined test and training operations.*

Planned Actions

1. Support increased use of T&E ranges for RDAT&E mission compatible training.

2. Promote compatible joint-service use of land, airspace, and facilities.

3. Increase integration of Fleet and joint-force training activities with weapons T&E and tactics development.

Objective 1-6: *Protect unique characteristics of the range.*

Planned Actions

1. Maintain land and airspace control to ensure safety, security and operational readiness.

2. Promote policies and practices that enhance and conserve the environmental quality of Range lands.

3. Control the electromagnetic environment to maintain and enhance EM capabilities.

4. Review new facilities and modifications to existing facility locations to ensure compatibility with established land uses.

5. Maintain and enhance liaison with off-installation land management agencies to avoid mission encroachment from incompatible land uses.

6. Conduct briefings for personnel working in endangered and sensitive habitat areas, and any cultural areas (range operations, Public Works Department [PWD], contractors, customers).

CLUMP Goal No. 2: Goal No. 2, *Improve the efficiency of land use management practices*, is addressed in Chapter 4.

3.3.2 Environmental Management

The following objectives and guidelines for Goal No. 3 are developed in accordance with the Installation's INRMP, ICRMP, and the Installation's policy per OPNAVINST 5090.1D.

CLUMP Goal No. 3: Ensure compliance with statutes and regulations to protect and conserve natural and cultural resources, to maintain environmental quality, and to exercise responsible stewardship of Navy administered lands.

Natural Resources: Includes threatened and endangered species; NAWSCL-designated special status species; surface water resources, groundwater resources, wildlife habitat conservation, and feral animals.

Objective 3-1: *Maintain viable populations of endangered and threatened species and special status species on NAWSCL ranges in accordance with the INRMP and successor documents. Listed species include the Mohave tui chub, desert tortoise, and the Inyo California towhee.*

Planned Actions

1. Ensure compliance with the Federal Endangered Species Act, including adherence to existing Section 7 consultation agreements (biological opinions [BOs]) and negotiated habitat management plans.

2. Ensure protection and/or conservation of listed species and special status species in accordance with applicable legal requirements.

3. Track, evaluate, and implement requirements of new laws and regulations, and modifications of existing laws and regulations as they pertain to natural resource management.

4. Formalize and continue the implementation of procedures to minimize the occurrence and effects of wildland fires. NAWSCL has an operational requirement to continue the use of hot spot charges, which present a risk of fire ignition. In addition, due to fiscal restraints, fire personnel have been removed from the South Range, which significantly increases response time. As a result, fires would have the potential to significantly impact desert tortoise critical habitat. As mitigation to those conditions, NAWCWD would continue to clear the targets in Superior Valley when vegetation is prevalent enough to sustain a fire. Implementation of this measure would likely reduce the spread of any ordnance-related wildfire and, therefore, effects to desert tortoise critical habitat would be reduced. The current fire management strategy has been revised during development of the EIS/LEIS as set forth in the February 2013 BO (8-8-12-F-29). These measures are intended to minimize and avoid fire effects to desert tortoise and associated habitat, and to maintain the safety of fire management personnel involved in the containment and suppression of wild fires.

Objective 3-2: Maintain and update baseline data for federally listed or otherwise protected and special status species in accordance with the INRMP and successor documents. Ensure these data are available to meet the Installation's planning and management needs.

Planned Actions

1. Track the listing status of species being proposed for listing under the Federal Endangered Species Act.

2. Develop and maintain an accurate and complete RSIMS/GIS database of all federally listed species, special status species and related features.

3. Continue to support the BASH plan.

Objective 3-3: *Continue to inventory, protect, and enhance springs, seeps, other water sources and associated habitats in accordance with the INRMP and successor documents.*

Planned Actions

1. Complete inventory of springs, seeps, other water sources, and associated habitats. Characterize flow rates, water quality, extent of water flows (open water), extent of associated riparian areas, etc.

2. Design and implement procedures to monitor, assess, protect, and enhance Installation surface water resources.

3. Provide appropriate protection to high-value habitats and water resources and ensure the availability of water for designated species.

Objective 3-4: *Continue the management of groundwater resources through the implementation of the goals and guidelines contained in the IWV Cooperative Groundwater*

Management Plan to ensure the availability of high-quality potable water to meet the Installation's long-term needs.

Planned Actions

1. Continue to limit and monitor additional large-scale pumping in areas designated in the IWV Cooperative Groundwater Management Plan.

2. Distribute new groundwater production in a manner that minimizes adverse effects on existing use patterns.

3. Continue to advocate the use of treated water, reclaimed water, and recycled, gray, and lower-quality waters for appropriate applications.

4. Explore the utility of other groundwater management methods, such as water transfer, banking, imports, and replenishment.

5. Continue cooperative groundwater data-acquisition and coordination efforts.

6. Explore potential for improvements to cooperative management framework.

Objective 3-5: *Continue programs to conserve and protect wildlife habitat quality, in accordance with the INRMP and successor documents.*

Planned Actions

1. Continue participation in range-wide land use planning processes to ensure that habitat impacts are minimized through avoidance of sensitive habitat areas (such as listed species habitat, springs, and seeps).

2. Develop and maintain a complete and accurate RSIMS/GIS database of habitats identifying biologic components.

3. Conduct surveys prior to new land development activities.

4. Conduct natural and cultural briefings for personnel (range operations, PWD, contractors, customers) working on the North and South Ranges.

Objective 3-6: *In accordance with the INRMP and successor documents, continue implementation of the Wild Horse and Burro Management efforts to maintain the wild horse herd at 168 animals and completely remove wild burros.*

Planned Actions

1. Continue efforts to achieve the goal of a feral burro population of 0 animals; continue implementation of burro removal efforts.

2. Continue efforts to achieve and maintain the feral horse herd at 168 animals, develop a Herd Management Plan.

Cultural Resources: Includes prehistoric, historic, and Native American resource, artifact curation, and data management.

Objective 3-7: *Conserve and protect significant prehistoric, historic, and Native American values.*

Planned Actions

1. Implement efficient and cost-effective procedures identified in the 2012 ICRMP, and successor documents, for complying with Section 106 of the NHPA.

2. Integrate cultural resources management goals and guidelines identified in the 2012 ICRMP, and successor documents, into other appropriate planning and management processes.

3. Identify, evaluate, and implement appropriate conservation measures, as identified in the 2012 ICRMP and successor documents, for National Register-eligible cultural resources.

4. Conduct Section 106 inventories in accordance with the procedures identified in the 2012 ICRMP, and successor documents, in target and test areas known to contain eligible properties or have a high probability of containing eligible properties.

5. In accordance with the 2012 ICRMP, and successor documents, complete Section 106 surveys and implement treatment plans (as appropriate) in target area and test site buffers range-wide.

6. Conduct surveys prior to new land disturbance activities.

7. Continue conducting paleontological inventories in areas sensitive to Pliocene, Pleistocene, and early Holocene resources.

8. Continue and enhance Tribal, interagency, and public relations outreach efforts.

9. Identify potential Native American traditional and religious sites and implement appropriate consultation and conservation measures.

10. Develop a public interpretive and management plan for the NHL that includes specific access trails, rest stops, and interpretive points.

11. Continue to work with local Native American groups to enhance the visitor's experience at the NHL and to continue to integrate their knowledge and concerns into the management plan.

12. Continue to list to the National Register eligible prehistoric sites, in cooperation with the SHPO.

Objective 3-8: *Provide adequate curation of archaeological material recovered from the field and the access to data acquired through field and archival research and oral history.*

Planned Actions

1. Ensure that archaeological and paleontological materials recovered from Installation lands are appropriated curated.

2. Ensure that access to recovered materials is accommodated for appropriate, authorized research, heritage values, and educational efforts.

Objective 3-9: Maintain and update complete and accurate baseline data for cultural resources management.

Planned Actions

1. Complete database for cultural resource features and develop confidential RSIMS/GIS database of all cultural resource inventory data including results of evaluation and data recovery efforts.

2. Complete a long-range sample survey of the entire Installation to fill in data gaps for areas not previously surveyed.

3. Digitize paleontological resources sensitivity map.

4. Maintain and update database (maps, site records, and reports) to be accessible for reference, research, planning and management purposes.

3.3.3 Public Health and Safety

The following objectives and guidelines for CLUMP Goal No. 4 were developed from existing management plans and processes, and are intended to ensure the health and safety of Installation personnel and that of the neighboring communities.

CLUMP Goal No. 4: Continue to ensure a safe and secure military operating environment on NAWSCL administered lands.

Range Safety and Security

Objective 4-1: *Maintain control of access to range operational areas to prevent personnel exposure to test hazards and continue to provide adequate security measures for classified programs.*

Planned Actions

1. Implement and disseminate, as needed, NAWS Range Management Plan and range access process.

2. Require special identification for all persons entering controlled access areas.

3. Install site-specific security measures for facilities and areas with special security needs.

4. Ensure that safety and security requirements are incorporated into decisions relating to nonmilitary use of lands.

5. Use appropriate safety and security procedures (Range Safety Manual [NAWCWD Instruction 5100.2A]) (NAWC 1999) for scheduling of military missions with other range-related activities.

6. Continue procedures to ensure safety and security when multiple activities occur on the NAWSCL lands.

Hazardous Substances Management

Objective 4-2: *Reduce the risk to human health and the environment from hazardous substance contamination caused by past operations at NAWSCL in a cost-effective manner.*

Planned Actions

1. Comply with the procedural and substantive requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA) and related state laws.

2. Follow the regulations set out in the National Contingency Plan (NCP) to identify, assess, and remediate past releases that pose a significant risk to human health or the environment.

3. Use a risk-management approach for programming, budgeting, and executing the program.

4. Seek out opportunities in each phase of the IRP to accelerate remediation efforts.

5. Develop and implement stakeholder programs to ensure active participation by all affected parties.

6. Continue the application of appropriate restrictions for re-use of lands as described by applicable Land Use Control Implementation Plans (LUCIPs).

AICUZ and Noise Abatement Programs

Objective 4-3: *Encourage compatible land use on- and off-installation, implement efforts to minimize aircraft and mission-related noise effects on-installation and in surrounding communities, and minimize risks to personnel and property from airfield and range aircraft operations on-installation.*

Planned Actions

1. Minimize aircraft noise in the community while maintaining operational readiness and safety requirements through continued implementation of established noise abatement procedures.

2. Encourage mission compatible on- and off-installation land uses through participation in agency land use planning processes, such as R-2508 Joint Land Use Study.

3. Maintain and enhance continued liaison with local and regional communities through briefings, press releases, publications and participation in local and regional land use decision processes.

4. Provide updated AICUZ plan to local governments for consideration in their comprehensive planning efforts. Promote the use of the AICUZ program guidelines to minimize incompatible use on surrounding lands.

3.3.4 Interagency Coordination

The following objectives and guidelines for CLUMP Goal No. 5 are listed below. Per Installation policy "the Navy will coordinate initiatives in the region, as appropriate, with other planning and management agencies involved in ecosystem management."

CLUMP Goal No. 5: Maintain and enhance coordination and cooperation with neighboring communities, agencies, and organizations.

Objective 5-1: *Continue to coordinate land-management initiatives with off-installation land management agencies to ensure compatible land use development on adjacent lands.*

Planned Actions

1. Maintain and enhance liaison with off-installation land-management agencies, including other military installations; local communities, including Ridgecrest, Trona, Inyokern, the Kern, San Bernardino, and Inyo county agencies; BLM; NPS; USFS; Inyokern Airport Commission; and other agencies as needed.

2. Continue participation with the DoD/DoI Desert Managers Group and other appropriate collaborative land use and environmental management initiatives in the region to ensure compatible development of public lands adjacent to NAWSCL.

3. Continue to implement NAWSINST 11010.1 NAWS China Lake Encroachment Management Team; to respond to mission encroachment challenges and support proactive strategies to ensure compatible land use development.

3.3.5 Nonmilitary Land Use

The following objectives and guidelines address CLUMP Goal No. 6 describing the Installation's approach to managing nonmilitary land uses in accordance with NAWSCL policy that "the Navy intends to accommodate nonmilitary land uses to the extent that these activities are compatible with the military mission and do not create adverse safety, security, fiscal, regulatory, or environmental effects."

Nonmilitary land uses are grouped into four categories: (1) Native American interests, (2) educational and research activities, (3) recreational activities, and (4) commercial activities. The Navy will regulate nonmilitary land uses to avoid adverse effects to the Installation's natural and cultural resources, and mission support capability while exercising the Installation's public lands stewardship responsibility.

CLUMP Goal No. 6: Provide reasonable accommodation of mission compatible nonmilitary land use to the extent practicable.

Native American Access

Objective 6-1: *Continue and enhance efforts to accommodate Tribal member access to sacred sites and traditional use areas to the extent practicable and consistent with military mission and security.*

Planned Actions

1. Continue accommodation of site visitations according to the terms of the Navy and Tribal MOA and on a case-by-case basis as needed.

2. Continue to coordinate and consult with Tribes on a nation-to-nation basis.

3. Continue to provide timely notice to and consult with Tribal governments before taking actions that may have the potential to significantly affect sacred sites and traditional use areas.

4. Maintain and enhance effective communication, coordination, and cooperation with Tribes.

Education and Research

Objective 6-2: *Continue to provide access to NAWSCL lands for appropriate research and education efforts to the extent practicable and consistent with the military mission and security.*

Planned Actions

1. Continue to seek and encourage the submittal of appropriate research proposals relating to environmental features of NAWSCL lands.

2. Continue to accommodate requests for access to NAWSCL lands for educational purposes.

3. Provide direction and encourage the linkage of research proposals to fill data gaps in NAWSCL resource inventories.

4. Continue to require that the Installation receive copies of any studies completed through education and research activities at NAWSCL.

Recreation

Objective 6-3: *Continue reasonable accommodation of public access for hiking, camping, photography, and petroglyph tours on a case-by-case, noninterference basis.*

Planned Actions

1. Maintain current policies and procedures regarding public access to Little Petroglyph Canyon.

2. Maintain current policies and procedures regarding public access for other mission compatible recreational activities.

3. Monitor the effects of recreational use/public access on natural and cultural resources.

Objective 6-4: *Update and implement policies and procedures for accommodating public access to NAWSCL ranges on a noninterference basis for recreational purposes.*

Planned Actions

1. Continue the case-by-case review of public access requests at NAWSCL.

Commercial Activities—Geothermal Development

Objective 6-5: *Continue geothermal production at NAWSCL in the existing Coso KGRA and continue geothermal exploration on the NAWSCL ranges.*

Planned Actions

1. Continue current geothermal production operations in accordance with existing agreements and environmental documentation.

2. Continue to coordinate geothermal exploration efforts with appropriate NAWSCL and NAWCWD stakeholders.

3. Continue efforts to minimize impacts to natural and cultural resources from geothermal production and exploration activities by jointly developing a NAWSCL standard operating procedures for Coso KGRA projects environmental review and approval.

4. Coordinate geothermal production and exploration within the Coso KGRA with the BLM.

Commercial Activities—Easements, Leases, and Licenses

Objective 6-6: *Accommodate easement, lease, and license requests on a case-by-case basis.*

Planned Actions

1. NAWSCL will consider appropriate easement, lease, and license requests on a case-by-case basis.

2. NAWSCL will continue to process approved easements, leases, and licenses in accordance with existing Navy regulations and other applicable guidance.

3. NAWSCL will continue to coordinate issuance of easements, leases, and licenses with the BLM per CDPA guidelines.

Commercial Activities—Filming

Objective 6-7: Accommodate filming requests on a case-by-case basis.

Planned Actions

1. NAWSCL will consider appropriate requests for commercial filming activities on NAWSCL lands on a case-by-case basis.

2. NAWSCL may update and implement policies and procedures, as needed, for public access related to commercial filming.

3. All permitted commercial filming will comply with public access policy.

4. Commercial filming may be considered on the South Range access road. No commercial filming will be permitted on the South Range beyond the access road (Christmas Canyon Gate) because of safety and security considerations.

4.0 LAND USE ADMINISTRATION AND IMPLEMENTATION

4.1 Land Use Management

As stated in Chapter 1 (page 1-2) CLUMP Goal No. 2 is to improve the efficiency of land use management practices to accommodate the ongoing and evolving military RDAT&E, training, and support mission at NAWSCL. The Installation's land use management process addresses that goal through the integration of land use planning for the military mission, environmental compliance and resource management, and Navy procedures for facility planning and implementing NEPA into a unified corporate management process.

Controlling land use on Navy owned and administered lands is a management responsibility assigned to the Commander, Navy Region Southwest and delegated to the Commanding Officer (CO) of NAWSCL through an MOA, (Appendix B/pending) between the Department of the Navy and the DoI. This MOA, established in accordance with the provisions of the CDPA, is consistent with Navy environmental management regulations defined in the Navy's Environmental Readiness Program Manual (OPNAVINST 5090.1D) and in recent Navy policies supporting mission readiness and sustainability.

Oversight for CLUMP implementation is the responsibility of the CO of NAWSCL. Successful implementation of the CLUMP will require the continued cooperation and participation of host and tenant activities. Refinement of the respective roles, responsibilities, and implementing procedures for Environmental Management at NAWSCL will be developed and implemented in accordance with the initiates as described in OPNAV5090.1D, the Commander, Navy Region Southwest (CNRSW)/NAWCWD environmental MOA (2010) (see Appendix C), and the NAWS Environmental Review Process (ERP) Instruction 5090.6 (Appendix F).

4.2 Land Management Factors

The primary factors involved in a land management decision include the land use requirements for the military mission, the potential effects of that use with regard to environmental compliance, and public health and safety requirements. Analysis of these factors is considered in the NAWSCL'S ERP (NAWSINST 5090.6) and the Site Approval Process (NAWINST 11100.1) and their successor documents. These processes are designed to evaluate new, or changes to ongoing, land uses to ensure that a proposed action complies with applicable requirements and is compatible with established mission land uses. Information from these review processes is used to make informed decisions for the accommodation of a proposed use. A brief overview of the components and processes for making land use decisions is provided in the following section.

4.2.1 Land Use Planning

Land use planning procedures address the siting and approval of actions occurring on and off-installation. On-installation land use planning is performed for activities occurring within Installation boundaries. Off-installation land use actions involve city, county, state, or federal agencies activities conducted within their jurisdiction.

On-Installation Land Use Planning

On-installation land use planning efforts fall into four general categories: (1) operational planning for range and laboratory activities, (2) environmental planning, (3) facilities planning, and (4) planning for nonmilitary activities.

(1) Operational Planning for Range and Laboratory Operations. Operational planning involves all aspects of military RDAT&E activities, as well as aircrew and ground troop training activities.

(2) Environmental Planning. Environmental planning applies the Installation's ERP to new projects and land uses. The ERP applies a multi-disciplined review of an action, evaluates its potential environmental effects, and generates an appropriate decision support document to ensure the action complies with NEPA.

(3) Facilities Planning. Facilities planning actions, including buildings, structures, roads, utilities, and other facilities excluding consumable items (targets, etc.), are processed through the NAWSINST 11100.1 (Site Approval and Project Review Process) and address the site selection, construction, operation, maintenance, alteration, and demolition of all facilities and infrastructure supporting the military mission (including temporary, portable, and relocatable structures) on NAWSCL administered lands. Facilities planning projects must be submitted to the Installation's Project Review Board (PRB). The PRB is the point where the ERP begins for these types of projects.

(4) Planning for Nonmilitary Activities. Mission compatible nonmilitary land uses are accommodated by NAWSCL on a case-by-case basis and include access for Native American religious and traditional uses, research projects and educational programs, public recreational activities (such as the use of the Installation's gymnasium, golf course, petroglyph tours, and other compatible activities), and limited commercial uses, such as the Coso Geothermal Project and filming.

Off-Installation Land Use Planning

Off-installation land uses include those activities conducted by local, county, state, and federal land management agencies. These actions generally support an agency's specific development proposals and environmental resource management initiatives. A China Lake team (NAWSCL and tenant activities) participates in established off-installation land use planning processes to review and evaluate proposed new or changes to existing land uses. Active participation in these review processes minimizes the potential for mission encroachment by encouraging compatible off-installation land uses and provides a forum for outreach efforts to maintain and improve our relationships with neighboring communities and land management agencies.

Off-installation land uses are monitored and coordinated internally through the Installation's Encroachment Management Team (EMT). The EMT facilitates coordination and effective participation in off-installation land use planning, in accordance with recent Navy guidance regarding encroachment management and mission readiness initiatives. The EMT will continue to address off-installation land use planning issues and be formalized via the NAWSCL Encroachment Management Instruction.

4.2.2 Environmental Management

NAWSCL implements a wide range of environmental compliance and resource conservation management programs in accordance with applicable laws, regulations and directives, and to maintain our commitment to excellence in resources management and stewardship. Environmental compliance is ensured through ongoing programs for managing hazardous waste, and maintaining clean air and clean water requirements. The continued conservation and protection of the Installation's environmental resources is ensured by the implementation of the management actions described in Chapter 3. These plans formally establish management goals and guidelines for NAWSCL and define the baseline environmental resource conditions used in the CLUMP.

4.2.3 Public Health and Safety

Public health and safety practices are implemented through a variety of NAWSCL and NAWCWD programs and instructions to ensure the safe conduct of military R&D, test, training, and operational support activities conducted at NAWSCL. Routine safety practices employed at NAWSCL include range safety, airfield flight safety and noise abatement, and explosives safety.

Range Safety

Access to the NAWSCL ranges is controlled by the NAWS Range Management Plan (RMP) (NAWSINST 8020.15) and NAWCWDINST 5520.2A and applies to all personnel entering the ranges. Safety procedures for range flight and ground operations are addressed in three primary directives, NAVSEA OP.5, Volume I; the NAWCWD Range Safety Manual (RSM); and NAVAIRINST 3960.4A. The NAVAIR instruction provides policies and procedures for the conduct of flight, ground and laboratory testing of air vehicles, weapons and installed systems. The NAWS RMP and NAWCWD RSM establish safety guidelines and procedures for all aspects of range test and training operations conducted at the NAWSCL ranges.

Airfield Flight Safety and Noise Abatement

Airfield flight operations safety and noise abatement considerations are addressed through the implementation of the Navy's AICUZ program as described in OPNAVINST 11010.36B. The AICUZ program is designed to protect public health and safety, and to prevent incompatible off-installation land uses from degrading the operational capability of military air installations. The AICUZ program characterizes the noise environment associated with the Installation's airfield operations, and provides recommendations for off-installation land uses that are compatible with noise levels, accident potential areas, and flight clearance requirements associated with military airfield operations. Flight safety considerations related to BASH are addressed through implementing the Installation's BASH management plan. The BASH plan provides aviators with information on bird habitat and movements in the vicinity of the range and airfield.

Explosives Safety

Safety procedures related to ordnance (ammunition and explosives) storage, transportation, and use on the ranges are governed by Navy regulations published in NAVSEA OP.5, Volume I, and standard operational procedures contained in the NAWS RMP and NAWCWD RSM. Explosive Safety Quantity Distance (ESQD) arcs are generated and assigned to ordnance storage facilities through the NAWSCL's Site Approval Instruction. Procedures to safely manage

material potentially presenting an explosive hazard (MPPEH) and UXO on the ranges are implemented in accordance to NAWSINT 8027.1 and the Operational Range Clearance Plan for MPPEH management.

4.3 Project Review and Environmental Approval Process

4.3.1 Planning Approach

NEPA requires federal agencies to utilize a systematic, interdisciplinary analysis based process to examine the potential environmental implications of proposed actions/activities prior to their execution.All projects and activities conducted at NAWCL are required to undergo an environmental and/or facility review to ensure the proposed activity complies with applicable requirements. Two separate NAWSCL processes provide the coordinated interdisciplinary analysis needed to make informed, data driven, land use management decisions. Those processes are the Site Approval and Environmental Review Processes as delineated in NAWSINST 11100 series and NAWSINST 5090.6 series respectively.

The NAWSINST 11100 series encompasses the NAWSCL Site Approval and Project Review Process and Dig Permit Request and Approval Process. This series is focused on planning requirements for facilities, infrastructure, and Class 1 & 2 Navy Real Property. The NAWSINST 5090.6 series describes the Installation's policies and procedures for performing the ERP for projects and activities that have the potential to affect the environment.

These planning processes provide analysis methods, define working relationships of personnel authorized by the NAWS Commanding Officer to perform environmental planning functions at NAWSCL, and facilitate effective and efficient procedures for supporting current and evolving mission requirements in accordance with applicable statutes, regulations, and directives.

4.3.2 Environmental Review Process

The NAWSCL ERP (NAWSINST 5090.6) describes the policies and procedures for performing project or activity reviews, prior to execution, to ensure compliance with applicable requirements. The ERP is summarized in the following sequential steps and illustrated in Figure 4-1.

In accordance with Section 8 - Procedures within NAWSINST 5090.6:

a. Designated Environmental Coordinators (ECs) shall implement the NAWSCL's ERP for activities conducted or supported by their organizations. Enclosure (3) depicts the work flow in support of NAWSCL's ERP. The standard operating procedure for the EC performing an initial environmental review is as follows:

(1) Secure an accurate and complete project description (PD) from the Action Proponent.

(2) Review and analyze the PD to determine which of the following descriptions are applicable:

(a) The proposed action qualifies as a Continuing Activity that does not contain a ground component or cause new ground disturbance, is consistent with applicable permits to operate, has little or no potential to impact the environment, and is covered by a valid NEPA document;

(b) The proposed action qualifies as a Continuing Activity that contains a ground component that has some potential to impact the environment (i.e., ordnance use in RDAT&E, or training activities; test or training operations with overland foot traffic requirements, etc.) and is covered by a valid NEPA document or previously approved Record of Environmental Review; or,

(c) The proposed action is a new or modified undertaking that is not covered by an existing approved and valid NEPA document or the ground component has significantly changed (type, tempo, location, etc.).

b. If the proposed action qualifies as a Continuing Activity, as described in paragraph B.a.(2).(a) above, and meets the appropriate authorizing Programmatic Memorandum for Record (PMFR) criteria, the EC shall electronically approve the activity and submit a bi-weekly PMFR to EMD via the electronic repository for inclusion in the administrative record.

c. If the proposed action qualifies as a continuing activity that contains a ground component that has some potential to impact the environment, as described in paragraph B.a. (2). (b) above, and is covered by a valid NEPA, the Commanding Officer Designated EC or EMD NEPA Coordinator will issue a Standard Memorandum for Record (SMFR) in accordance with enclosure (2).

d. If a proposed action is a new or modified undertaking that is not covered by a valid NEPA document or the ground component of the activity has changed, as described in paragraph B.a. (2). (c) above, the EC will discuss the activity with EMD subject matter experts. The EMD subject matter expert and EC will determine the appropriate NEPA document (Categorical Exclusion [CATEX], EA, or EIS) required. In the case where a CATEX may be used, the EC and EMD subject matter experts will jointly prepare the CATEX for issuance. In the case where an EA or EIS is required, CNRSW will be notified and the preparation of the appropriate NEPA document (EA or EIS) will be prepared in accordance with reference (g).

e. The standard operating procedure for issuance of a CATEX is as follows:

(1) The EMD NEPA Coordinator and designated EC shall jointly prepare a draft CATEX once a complete and accurate PD and acceptable technical support data have been received. Designated ECs are responsible for submitting the PD and recommending applicable mitigation measures. EMD subject matter experts (SMEs) are responsible for evaluating the potential environmental effects of the project or activity and concurring with or coordinating revisions to proposed mitigation measures.

(2) A copy of the draft CATEX will be routed to EMD and the EC's command for review and comment. Participant's comments are coordinated and incorporated in a final CATEX.

(3) The final CATEX is routed for signature by the following individuals:

(a) Action proponent Responsible Party: The Responsible Party will validate the project description and/or assume the responsibility to ensure that all required mitigation measures will be fully implemented over the course of the activities duration.

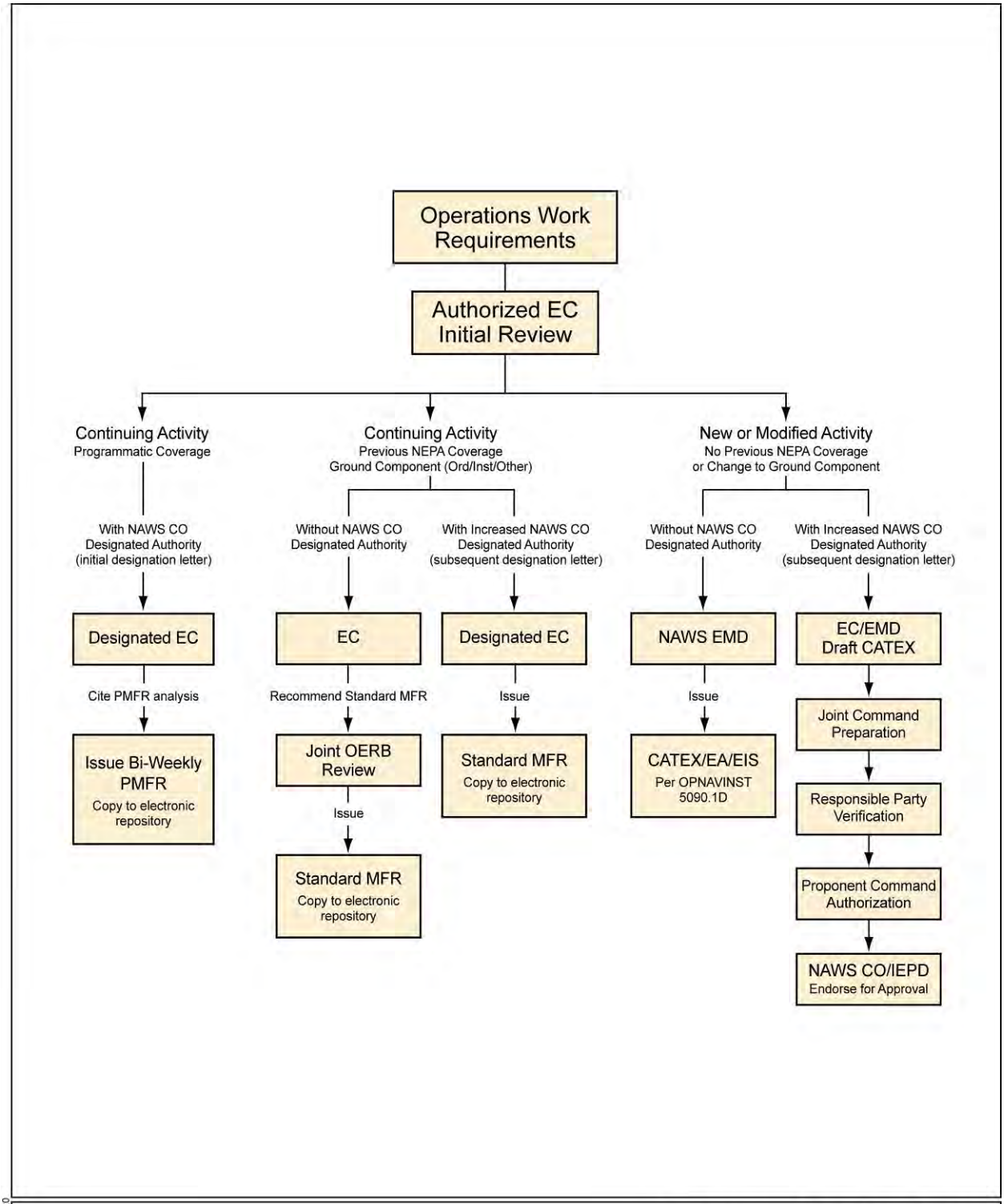
(b) Action Proponent Command Representative: The Command Representative will authorize the CATEX.

(c) NAWSCL Commanding Officer or Environmental Program Director (EPD): The Commanding Officer or EPD will endorse for approval prior to the activity being executed aboard NAWSCL. The CATEX will be retained in Command files and made available for review during Environmental Compliance Evaluations.

f. EAs and EISs are required for those projects or undertakings that do not qualify for a Memorandum for Record (MFR) or a CATEX and will be executed in accordance with the procedures contained in reference (g).

g. MFRs will be maintained on file by NAWS EMD and in a shared electronic repository to support the administrative record for the proposed activity in accordance with NEPA requirements for review during Environmental Compliance Evaluations.

FIGURE 4-1 ENVIRONMENTAL REVIEW PROCESS FLOWCHART



CHINALAKECLUMP/020

Environmental Review Process Flowchart

The following provides a simplified illustration of the planning process that is used to support land use requirements.

4.3.3 Summary

NAWSCL continues to be recognized as a desirable location to support ever evolving mission requirements spanning from RDAT&E to Fleet representative training to nonmilitary activities including commercial, educational, recreational, and Native American traditional uses. To adequately support such dynamic requirements, the CLUMP will be reviewed every year and periodically updated in response to evolving management requirements. Adaptability, foresight, coordination, and cooperation are the cornerstones to an effective land use management plan. The CLUMP has been designed to provide a framework that planners and decision makers alike can use to effectively and efficiently manage the land assigned to NAWSCL while supporting the military and nonmilitary missions that occur on the Installation.

5.0 REFERENCES

Bagley, M. 1986. *Sensitive Plant Species of the Naval Weapons Center, China Lake and the Surrounding Regions; Inyo, Kern, and San Bernardino Counties, California*. Prepared for NWC Environmental Branch with Ecological Research Services.

Berenbrock, C., and P. Martin. 1991. *The Ground-Water Flow System in Indian Wells Valley, Kern, Inyo, and San Bernardino Counties, California*. US Geological Survey (USGS) Water Resources Investigations Report 89-4191.

Blue, D., and D.W. Moore. 1995. *Checklist of the Birds of Indian Wells Valley*. Kerncrest Chapter, National Audubon Society, Ridgecrest, CA.

Brooks, C.R., W.M. Clements, J.A. Kantner, and G.Y. Poirier. 1979. *A Land Use History of Coso Hot Springs, Inyo County, California*. Iroquois Research Institute, Fairfax, VA.

Bureau of Land Management. 2007. *West Mojave Plan*, December.

California Energy Commission. 2012. *Draft Desert Renewable Energy Conservation Plan*.

City of Ridgecrest. 2009. *City of Ridgecrest General Plan*. December.

Department of the Interior (DoI), Bureau of Land Management (BLM). 1980. Conservation Area Plan 1980 as amended. Available at http://www.blm.gov/pgdata/etc/medialib//blm/ca/pdf/pdfs/cdd_pdfs. Par.aa6ec747.File.pdf/CA_Desert_.pdf. Accessed December 2011.

DoI. 1995a. *Wilderness Areas Maps and Information Guide*.

DoI, BLM. 1995b. *The California Desert Conservation Area Plan*.

Gilreath, Amy. 1999. The Archaeology and Petroglyphs of the Coso Rock Art Landmark. In *American Indian Rock Art*, Volume 25, edited by S. Freers, pp. 33–44. American Rock Art Research Association, Tucson, AZ.

Indian Wells Valley Cooperative Groundwater Technical Advisory Committee (IWVCGTAC). 2008. *Installation and Implementation of a Comprehensive Groundwater Monitoring Program for the Indian Wells Valley, California*. Prepared by Indian Wells Valley Cooperative Groundwater Technical Advisory Committee and Geochemical Technologies.

Inyo County. 2001. *General Plan Summary for the Inyo County General Plan*. March.

Kern County. 2009. *Kern County General Plan*. June.

Lobeck, A.K. 1975. *Physiographic Diagram of North America*. The Geographical Press, Hammond, Maplewood, NJ.

Malcom Pirnie, Inc. 2006. Preliminary Assessment, Mojave Aerial Gunnery Range C, Target 71 (Section 18), California. February.

Naval Air Weapons Center (NAWC). 1999. Pacific Ranges and Facilities Department Range Safety Manual (RSF), Instruction 5100.2A. September.

Naval Air Warfare Center Weapons Division (NAWCWD). 2010. Ranges Department China Lake Ranges Road Usage Direction. May.

NAWCWD. 2013. Naval Air Warfare Center Weapons Division Operational Requirements Document. April.

NAWS. 2011. NAWSINST 11010.1 NAWS China Lake Encroachment Management Team (EMT) 10 January.

Naval Weapons Center (NWC). 1979. Memorandum of Agreement between the Commander Naval Weapons Center on behalf of the U.S. Government and the Coso Ad Hoc Committee, and the Owens Valley Paiute-Shoshone Band of Indians and Certain Indian People in the Kern Valley Indian Community Concerning the Area known as Coso Hot Springs, Naval Weapons Center, China Lake, CA.

San Bernardino County. 2007. *San Bernardino County General Plan*. March.

Tetra Tech. 2003. *Draft Basewide Hydrogeologic Characterization Summary Report Naval Air Weapons Station China Lake, California*. January. Prepared for Department of the Navy, Naval Facilities Command Southwest Division.

Todd Engineers. 2014. *Indian Wells Valley Resource Opportunity Plan, Water Availability and Conservation Report*, January.

U.S. Fish and Wildlife Service (USFWS). 1998. Endangered and Threatened Wildlife and Plants, Final Rules on Listing, 50 CFR Part 17, October 6.

U.S. Navy. 1979. Memorandum of Agreement between the U.S. Government, and the Coso Ad Hoc Committee, Owens Valley Paiute-Shoshone Band of Indians for access to the Coso Hot Springs, Naval Weapons Center, China Lake, California. Document on file at NAWSCL.

U.S. Navy. 1996. *China Lake Range Management Plan*, Draft.

U.S. Navy. 1997. *Final Land Use Patterns Report for Naval Air Weapons Station China Lake in Support of the Land Use Management Plan and Environmental Impact Statement*. October.

U.S. Navy. 1998. *Preliminary Draft Naval Air Weapons Station China Lake Integrated Natural Resources Management Plan, 1998–2002*. March 15.

U.S. Navy. 2000. *Naval Air Weapons Station China Lake California, Integrated Natural Resources Management Plan (INRMP) 2000–2004*.

U.S. Navy. 2004. *Final Environmental Impact Statement for Proposed Military Operational Increases and Implementation of Associated Comprehensive Land Use and Integrated*

Natural Resources Management Plans, Volume I. Prepared by Naval Air Weapons Station China Lake and the Bureau of Land Management. February.

U.S. Navy. 2005. *Comprehensive Land Use Management Plan (CLUMP) for Naval Air Weapons Station, China Lake, CA*. May.

U.S. Navy. 2006. *Naval Air Weapons Station, China Lake, Installation Restoration Program Site Management Plan*.

U.S. Navy. 2007. *Activity Overview Plan (AOP), Naval Air Weapons Station China Lake, California*. July.

U.S. Navy. 2008. *Airfield Master Plan, Naval Air Weapons Station China Lake, California*. January.

U.S. Navy. 2010. *Mainsite Master Plan, Naval Air Weapons Station China Lake, California*. October.

U.S. Navy. 2011. *Naval Air Weapons Station China Lake California, Air Installations Compatible Use Zones (AICUZ) Study*. April.

U.S. Navy. 2012a *Integrated Cultural Resources Management Plan for Naval Air Weapons Station, China Lake, Inyo, Kern, and San Bernardino Counties, California*. Prepared for U.S. Department of the Navy, Naval Air Weapons Station, China Lake.

U.S. Navy. 2012b. *Programmatic Agreement Among the U.S. Department of Navy, Naval Air Weapons Station China Lake, The Advisory Council on Historic Preservation and The California State Historic Preservation Officer Regarding Implementation of Integrated Cultural Resources Management Plan at Naval Air Weapons Station China Lake, California*. September.

U.S. Navy. 2013a. Cadastral Survey Map of Naval Air Weapons Station, China Lake Lands, 22 February.

U.S. Navy. 2013b. NAWSINST 5090.6, Policy and Procedures for Implementing the Environmental review Process (ERP) for Activities Occurring at Naval Air Weapons Station (NAWS) China Lake, 8 March.

U.S. Navy. 2014. Finding of No Significant Impact for the Environmental Assessment on the Revised Integrated Natural Resources Management Plan for Naval Air Weapons Station China Lake, Inyo, Kern, and San Bernardino Counties, California. 2 September.

This page intentionally left blank.

Appendix A.

California Desert Protection Act, Section 8, Military Overflight and Land Withdrawal Act, 1994

PL 103-433, 1994 S21
(16 USCA § 410aa-82)

TITLE VIII--MILITARY LANDS AND OVERFLIGHTS

SEC. 801. SHORT TITLE AND FINDINGS.

(a) SHORT TITLE - This title may be cited as the `California Military Lands Withdrawal and Overflights Act of 1994'.

(b) FINDINGS - The Congress finds that:

(1) military aircraft testing and training activities as well as demilitarization activities in California are an important part of the national defense system of the United States, and are essential in order to secure for the American people of this and future generations an enduring and viable national defense system;
(2) the National Park System units and wilderness areas designated by this Act lie within a region critical to providing training, research, and development for the Armed Forces of the United States and its allies;
(3) there is a lack of alternative sites available for these military training, testing, and research activities;

(4) continued use of the lands and airspace in the California desert region is essential for military purposes; and

(5) continuation of these military activities, under appropriate terms and conditions, is not incompatible with the protection and proper management of the natural, environmental, cultural, and other resources and values of the Federal lands in the California desert area.

SEC. 802. MILITARY OVERFLIGHTS.

a) OVERFLIGHTS - Nothing in this Act, the Wilderness Act, or other land management laws generally applicable to the new units of the National Park or Wilderness Preservation Systems (or any additions to existing units) designated by this Act, shall restrict or preclude low-level overflights of military aircraft over such units, including military overflights that can be seen or heard within such units.

b) SPECIAL AIRSPACE - Nothing in this Act, the Wilderness Act, or other land management laws generally applicable to the new units of the National Park or Wilderness Preservation Systems (or any additions to existing units) designated by this Act, shall restrict or preclude the designation of new units of special airspace or the use or establishment of military flight training routes over such new park system or wilderness units.

c) NO EFFECT ON OTHER LAWS - Nothing in this section shall be construed to modify, expand, or diminish any authority under other Federal law.

SEC. 803. WITHDRAWALS.

(a) CHINA LAKE - (1) Subject to valid existing rights and except as otherwise provided in this title, the Federal lands referred to in paragraph (2), and all other areas within the boundary of such lands as depicted on the map specified in such paragraph which may become subject to the operation of the public land laws, are

hereby withdrawn from all forms of appropriation under the public land laws (including the mining laws and the mineral leasing laws). Such lands are reserved for use by the Secretary of the Navy for:

(A) use as a research, development, test, and evaluation laboratory;

(B) use as a range for air warfare weapons and weapon systems;

(C) use as a high hazard training area for aerial gunnery, rocketry, electronic warfare and countermeasures, tactical maneuvering and air support;

(D) geothermal leasing and development and related power production activities; and

(E) subject to the requirements of section 804(f) of this title, other defense-related purposes consistent with the purposes specified in this paragraph.

(2) The lands referred to in paragraph (1) are the Federal lands located within the boundaries of the China Lake Naval Weapons Center, comprising approximately one million one hundred thousand acres in Inyo, Kern, and San Bernardino Counties, California, as generally depicted on a map entitled `China Lake Naval Weapons Center Withdrawal--Proposed', dated January 1985.

(b) CHOCOLATE MOUNTAIN - (1) Subject to valid existing rights and except as otherwise provided in this title, the Federal lands referred to in paragraph (2), and all other areas within the boundary of such lands as depicted on the map specified in such paragraph which may become subject to the operation of the public land laws, are hereby withdrawn from all forms of appropriation under the public land laws (including the mining laws and the mineral leasing and the geothermal leasing laws). Such lands are reserved for use by the Secretary of the Navy for:

(A) testing and training for aerial bombing, missile firing, tactical maneuvering and air support; and

(B) subject to the provisions of section 804(f) of this title, other defense-related purposes consistent with the purposes specified in this paragraph.

(2) The lands referred to in paragraph (1) are the Federal lands comprising approximately two hundred twenty-six thousand seven hundred and eleven acres in Imperial County, California, as generally depicted on a map entitled `Chocolate Mountain Aerial Gunnery Range Proposed--Withdrawal' dated July 1993.

SEC. 804. MAPS AND LEGAL DESCRIPTIONS.

(a) PUBLICATION AND FILING REQUIREMENT- As soon as practicable after the date of enactment of this title, the Secretary shall:

(1) publish in the Federal Register a notice containing the legal description of the lands withdrawn and reserved by this title; and

(2) file maps and the legal description of the lands withdrawn and reserved by this title with the Committee on Energy and Natural Resources of the United States Senate and the Committee on Natural Resources of the United States House of Representatives.

(b) TECHNICAL CORRECTIONS- Such maps and legal descriptions shall have the same force and effect as if they were included in this title except that the Secretary may correct clerical and typographical errors in such maps and legal descriptions.

(c) AVAILABILITY FOR PUBLIC INSPECTION- Copies of such maps and legal descriptions shall be available for public inspection in the appropriate offices of the Bureau of Land Management; the office of the commander of the Naval Weapons Center, China Lake, California; the office of the commanding officer, Marine Corps Air Station, Yuma, Arizona; and the Office of the Secretary of Defense, Washington, District of Columbia.

(d) REIMBURSEMENT- The Secretary of Defense shall reimburse the Secretary for the cost of implementing this section.

SEC. 805. MANAGEMENT OF WITHDRAWN LANDS.

(a) MANAGEMENT BY THE SECRETARY OF THE INTERIOR - (1) Except as provided in subsection (g), during the period of the withdrawal the Secretary shall manage the lands withdrawn under section 802 of this title pursuant to the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.) and other applicable law, including this title.

(2) To the extent consistent with applicable law and Executive orders, the lands withdrawn under section 802 of this title may be managed in a manner permitting:

(A) the continuation of grazing pursuant to applicable law and Executive orders were permitted on the date of enactment of this title;

(B) protection of wildlife and wildlife habitat;

(C) control of predatory and other animals;

(D) recreation (but only on lands withdrawn by section 802(a) of this title [relating to China Lake]);

(E) the prevention and appropriate suppression of brush and range fires resulting from nonmilitary activities; and

(F) geothermal leasing and development and related power production activities on the lands withdrawn under section 802(a) of this title (relating to China Lake).

(3)(A) All nonmilitary use of such lands, including the uses described in paragraph (2), shall be subject to such conditions and restrictions as may be necessary to permit the military use of such lands for the purposes specified in or authorized pursuant to this title.

(B) The Secretary may issue any lease, easement, right-of-way, or other authorization with respect to the nonmilitary use of such lands only with the concurrence of the Secretary of the Navy.

(b) CLOSURE TO PUBLIC- (1) If the Secretary of the Navy determines that military operations, public safety, or national security require the closure to public use of any road, trail, or other portion of the lands

withdrawn by this title, the Secretary may take such action as the Secretary determines necessary or desirable to effect and maintain such closure.

(2) Any such closure shall be limited to the minimum areas and periods which the Secretary of the Navy determines are required to carry out this subsection.

(3) Before and during any closure under this subsection, the Secretary of the Navy shall:

(A) keep appropriate warning notices posted; and

(B) take appropriate steps to notify the public concerning such closures.

(c) MANAGEMENT PLAN - The Secretary (after consultation with the Secretary of the Navy) shall develop a plan for the management of each area withdrawn under section 802 of this title during the period of such withdrawal. Each plan shall:

(1) be consistent with applicable law;

(2) be subject to conditions and restrictions specified in subsection (a)(3);

(3) include such provisions as may be necessary for proper management and protection of the resources and values of such area; and

(4) be developed not later than three years after the date of enactment of this title.

(d) BRUSH AND RANGE FIRES - The Secretary of the Navy shall take necessary precautions to prevent and suppress brush and range fires occurring within and outside the lands withdrawn under section 802 of this title as a result of military activities and may seek assistance from the Bureau of Land Management in the suppression of such fires. The memorandum of understanding required by subsection (e) shall provide for Bureau of Land Management assistance in the suppression of such fires, and for a transfer of funds from the Department of the Navy to the Bureau of Land Management as compensation for such assistance.

(e) MEMORANDUM OF UNDERSTANDING - (1) The Secretary and the Secretary of the Navy shall (with respect to each land withdrawal under section 802 of this title) enter into a memorandum of understanding to implement the management plan developed under subsection (c). Any such memorandum of understanding shall provide that the Director of the Bureau of Land Management shall provide assistance in the suppression of fires resulting from the military use of lands withdrawn under section 802 if requested by the Secretary of the Navy.

(2) The duration of any such memorandum shall be the same as the period of the withdrawal of the lands under section 802.

(f) ADDITIONAL MILITARY USES- Lands withdrawn under section 802 of this title may be used for defense-related uses other than those specified in such section. The Secretary of Defense shall promptly notify the Secretary in the event that the lands withdrawn by this title will be used for defense-related purposes other than those specified in section 802. Such notification shall indicate the additional use or uses involved, the proposed duration of such uses, and the extent to which such additional military uses of the withdrawn lands

will require that additional or more stringent conditions or restrictions be imposed on otherwise-permitted nonmilitary uses of the withdrawn land or portions thereof.

(g) MANAGEMENT OF CHINA LAKE- (1) The Secretary may assign the management responsibility for the lands withdrawn under section 802(a) of this title to the Secretary of the Navy who shall manage such lands, and issue leases, easements, rights-of-way, and other authorizations, in accordance with this title and cooperative management arrangements between the Secretary and the Secretary of the Navy: *Provided*, That nothing in this subsection shall affect geothermal leases issued by the Secretary prior to the date of enactment of this title, or the responsibility of the Secretary to administer and manage such leases, consistent with the provisions of this section. In the case that the Secretary assigns such management responsibility to the Secretary of the Navy before the development of the management plan under subsection (c), the Secretary of the Navy (after consultation with the Secretary) shall develop such management plan.

(2) The Secretary shall be responsible for the issuance of any lease, easement, right-of-way, and other authorization with respect to any activity which involves both the lands withdrawn under section 802(a) of this title and any other lands. Any such authorization shall be issued only with the consent of the Secretary of the Navy and, to the extent that such activity involves lands withdrawn under section 802(a), shall be subject to such conditions as the Secretary of the Navy may prescribe.

(3) The Secretary of the Navy shall prepare and submit to the Secretary an annual report on the status of the natural and cultural resources and values of the lands withdrawn under section 802(a). The Secretary shall transmit such report to the Committee on Energy and Natural Resources of the United States Senate and the Committee on Natural Resources of the United States House of Representatives.

(4) The Secretary of the Navy shall be responsible for the management of wild horses and burros located on the lands withdrawn under section 802(a) of this title and may utilize helicopters and motorized vehicles for such purposes. Such management shall be in accordance with laws applicable to such management on public lands and with an appropriate memorandum of understanding between the Secretary and the Secretary of the Navy.

(5) Neither this title nor any other provision of law shall be construed to prohibit the Secretary from issuing and administering any lease for the development and utilization of geothermal steam and associated geothermal resources on the lands withdrawn under section 802(a) of this title pursuant to the Geothermal Steam Act of 1970 (30 U.S.C. 1001 et seq.) and other applicable law, but no such lease shall be issued without the concurrence of the Secretary of the Navy.

(6) This title shall not affect the geothermal exploration and development authority of the Secretary of the Navy under section 2689 of title 10, United States Code, except that the Secretary of the Navy shall obtain the concurrence of the Secretary before taking action under that section with respect to the lands withdrawn under section 802(a).

(7) Upon the expiration of the withdrawal or relinquishment of China Lake, Navy contracts for the development of geothermal resources at China Lake then in effect (as amended or renewed by the Navy after the date of enactment of this title) shall remain in effect: *Provided*, That the Secretary, with the consent of the Secretary of the Navy, may offer to substitute a standard geothermal lease for any such contract.

SEC. 806. DURATION OF WITHDRAWALS.

(a) DURATION- The withdrawals and reservations established by this title shall terminate twenty years after the date of enactment of this title.

(b) DRAFT ENVIRONMENTAL IMPACT STATEMENT- No later than eighteen years after the date of enactment of this title, the Secretary of the Navy shall publish a draft environmental impact statement concerning continued or renewed withdrawal of any portion of the lands withdrawn by this title for which that Secretary intends to seek such continued or renewed withdrawal. Such draft environmental impact statement shall be consistent with the requirements of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) applicable to such a draft environmental impact statement. Prior to the termination date specified in subsection (a), the Secretary of the Navy shall hold a public hearing on any draft environmental impact statement published pursuant to this section. Such hearing shall be held in the State of California in order to receive public comments on the alternatives and other matters included in such draft environmental impact statement.

(c) EXTENSIONS OR RENEWALS- The withdrawals established by this title may not be extended or renewed except by an Act or joint resolution of Congress.

SEC. 807. ONGOING DECONTAMINATION.

(a) PROGRAM - Throughout the duration of the withdrawals made by this title, the Secretary of the Navy, to the extent funds are made available, shall maintain a program of decontamination of lands withdrawn by this title at least at the level of decontamination activities performed on such lands in fiscal year 1986.

(b) REPORTS - At the same time as the President transmits to the Congress the President's proposed budget for the first fiscal year beginning after the date of enactment of this title and for each subsequent fiscal year, the Secretary of the Navy shall transmit to the Committees on Appropriations, Armed Services, and Energy and Natural Resources of the United States Senate and to the Committees on Appropriations, Armed Services, and Natural Resources of the United States House of Representatives a description of the decontamination efforts undertaken during the previous fiscal year on such lands and the decontamination activities proposed for such lands during the next fiscal year including--

(1) amounts appropriated and obligated or expended for decontamination of such lands;

(2) the methods used to decontaminate such lands;

(3) amount and types of contaminants removed from such lands;

(4) estimated types and amounts of residual contamination on such lands; and

(5) an estimate of the costs for full contamination of such lands and the estimate of the time to complete such decontamination.

SEC. 808. REQUIREMENTS FOR RENEWAL.

(a) NOTICE AND FILING - (1) No later than three years prior to the termination of the withdrawal and reservation established by this title, the Secretary of the Navy shall advise the Secretary as to whether or not

the Secretary of the Navy will have a continuing military need for any of the lands withdrawn under section 802 after the termination date of such withdrawal and reservation.

(2) If the Secretary of the Navy concludes that there will be a continuing military need for any of such lands after the termination date, the Secretary of the Navy shall file an application for extension of the withdrawal and reservation of such needed lands in accordance with the regulations and procedures of the Department of the Interior applicable to the extension of withdrawals of lands for military uses.

(3) If, during the period of withdrawal and reservation, the Secretary of the Navy decides to relinquish all or any of the lands withdrawn and reserved by this title, the Secretary of the Navy shall file a notice of intention to relinquish with the Secretary.

(b) CONTAMINATION- (1) Before transmitting a notice of intention to relinquish pursuant to subsection (a), the Secretary of Defense, acting through the Department of the Navy, shall prepare a written determination concerning whether and to what extent the lands that are to be relinquished are contaminated with explosive, toxic, or other hazardous materials.

SEC. 809. DELEGABILITY.

(a) DEPARTMENT OF DEFENSE- The functions of the Secretary of Defense or the Secretary of the Navy under this title may be delegated.

(b) DEPARTMENT OF THE INTERIOR- The functions of the Secretary under this title may be delegated, except that an order described in section 807(f) may be approved and signed only by the Secretary, the Under Secretary of the Interior, or an Assistant Secretary of the Department of the Interior.

SEC. 810. HUNTING, FISHING, AND TRAPPING.

All hunting, fishing, and trapping on the lands withdrawn by this title shall be conducted in accordance with the provisions of section 2671 of title 10, United States Code.

SEC. 811. IMMUNITY OF UNITED STATES.

The United States and all departments or agencies thereof shall be held harmless and shall not be liable for any injury or damage to persons or property suffered in the course of any geothermal leasing or other authorized nonmilitary activity conducted on lands described in section 802 of this title.

SEC. 812. EL CENTRO RANGES.

The Secretary is authorized to permit the Secretary of the Navy to use until January 1, 1997, the approximately forty-four thousand eight hundred and seventy acres of public lands in Imperial County, California, known as the East Mesa and West Mesa ranges, in accordance with the Memorandum of Understanding dated June 29, 1987, between the Bureau of Land Management, the Bureau of Reclamation, and the Department of the Navy. All military uses of such lands shall cease on January 1, 1997, unless authorized by a subsequent Act of Congress.

Appendix B.

Department of Interior/Department of Navy, Memorandum of Agreement Regarding Land Management Authority, 1996

MEMORANDUM OF AGREEMENT
between the
SECRETARY of the INTERIOR
and
SECRETARY of the NAVY
regarding
Management of Withdrawn Lands
at the
Naval Air Weapons Station, China Lake

This Memorandum of Agreement (MOA) is entered into this 11 day of March, 1996.

WHEREAS, the California Desert Protection Act (the Desert Act), Public Law 103-433, 1994, reauthorized the withdrawal of certain public lands within California for continued use by the Department of the Navy for military research, development, test and evaluation, training and demilitarization activities;

WHEREAS, Section 805, subsection (g), of the Desert Act provided the Secretary of the Interior the authority to assign management responsibility for these withdrawn lands to the Secretary of the Navy;

WHEREAS, the Naval Air Weapons Station, China Lake and the Bureau of Land Management in California enjoy a long-standing cooperative relationship concerning land resources management in the California Mojave Desert region;

WHEREAS, in furtherance of this cooperation, the Secretary of the Interior, acting through the California State Director, Bureau of Land Management desires to formally assign land management responsibility for China Lake withdrawn lands to the Secretary of the Navy and establish the cooperative arrangements described in Section 805, subsection (g) of the Desert Act;

WHEREAS, the Secretary of the Navy desires to accept such responsibility and, through the Commanding Officer, Naval Air Weapons Station, China Lake, to cooperatively develop a land management plan for China Lake and to otherwise meet all applicable requirements of the Desert Act.

NOW THEREFORE, the parties hereby agree as follows:

1. The Secretary of the Interior;
Does hereby assign management responsibility of the China Lake withdrawn lands to the Secretary of the Navy in accordance with the provisions of the Desert Act and the terms of this agreement.

2. The Secretary of the Navy;
Does hereby accept the management responsibility for the China Lake withdrawn lands and, through the Commanding Officer, Naval Air Weapons Station, China Lake, agrees to manage these withdrawn lands in accordance with the Desert Act and the terms of this agreement.

Bureau of Land Management

Ed Hastey

California State Director
Date 10/31/95

Department of the Navy

Duncan Holaday
Deputy Assistant Secretary
(Installations and Facilities)

Date 11 March 96

Appendix C.

Memorandum of Agreement Between Commander, Navy Region Southwest, and Naval Air Warfare Center Division, 2010

COMMANDER, NAVY REGION SOUTHWEST
937 North Harbor Drive
San Diego, CA 92132-0058

NAVAL AIR WARFARE CENTER WEAPONS DIVISION
1 Administrative Circle Stop 1002
China Lake California 93555-6100

CNRSW
N00242-20100908-CL21

NAWCWD
MOA 10-5090-012

MEMORANDUM OF AGREEMENT
BETWEEN
COMMANDER, NAVY REGION SOUTHWEST
AND
NAVAL AIR WARFARE CENTER WEAPONS DIVISION

Subj: ENVIRONMENTAL DUTIES AND RESPONSIBILITIES AT NAVAL AIR WEAPONS STATION, CHINA LAKE

Ref:
(a) DODD 4715.1E, Environment, Safety and Occupational Health
(b) SECNAVINST 5000.2D, Implementation and Operation of the Defense Acquisition System and the Joint Capabilities Integration and Development System
(c) SECNAVINST 5090.8A, Policy for Environmental Protection, Natural Resources, and Cultural Resources Programs
(d) SECNAVINST 5090.6A, Environmental Planning for Department of Navy Actions
(e) OPNAVINST 11000.16A, Command Responsibility for Shore Activity Land and Facilities
(f) OPNAVINST 5090.1C, Environmental Readiness Program Manual
(g) Memorandum Of Agreement between the Secretary of Interior and the Secretary of the Navy regarding Management of Withdrawn Lands at Naval Air Weapons Station China Lake
(h) CNICINST 4000.1, Support Agreement Program
(i) COMNAVREGSWINST 5090.3A, Procedures for Coordinating and Implementing the National Environmental Policy Act (NEPA)
(j) NAWS China Lake Final Environmental Impact Statement for the Proposed Military Operational Increases and Implementation of Associated Land Use and Natural Resources Management Plans
(k) NAWS China Lake Comprehensive Land Use Management Plan
(l) NAWSINST 11100.1, Site Approval and Project Review Process
(m) NAWSINST for Management of Material Potentially Presenting an Explosive Hazard (MMPEH)
(n) NAWSINST5090.3, Environmental Management System Description Document

(o) NAWSNOTICE 5090 Interim Policy and Procedures for Conducting Environmental Reviews of Test and Training Activities Conducted at Naval Air Weapons Station China Lake
(p) NAWS China Lake Integrated Natural Resources Management Plan
(q) NAWS China Lake Spill Response Plan
(r) NAVAIRINST 5090.2A, Environmental Planning for Naval Air Systems Command Actions
(s) NAWCWDINST 5090.2, National Environmental Policy Act Compliance

1. Purpose.

The purpose of this Memorandum of Agreement (MOA) is to ensure that the Commander, Navy Region Southwest and the Commander, Naval Air Warfare Center Weapons Division (NAWCWD) and their respective staff and personnel are in agreement on duties and responsibilities that each possess regarding mutually developed environmental compliance processes and procedures. These responsibilities will be implemented through this agreement so their respective missions may be performed in full compliance with applicable Federal, State and local laws that relate to the protection of the environment at Naval Air Weapons Station (NAWS) China Lake.

2. Background.

a. NAWS China Lake is the installation host command with management authority for all Class I and II property on the largest Navy installation in the world. As the supporting command, NAWS China Lake supports numerous tenant commands including NAWCWD.

b. NAWCWD is the major tenant command supported at NAWS China Lake. NAWCWD is the Navy's premier air weapons research, development, acquisition, test, and evaluation (RDAT&E) Command and operates national asset ranges, facilities and laboratories in support of Naval Aviation and other national security needs.

c. The Commanding Officer, NAWS China Lake is responsible for all aspects of environmental, natural resources and cultural and historical preservation resource compliance at China Lake . The host commander has overall management responsibility for environmental compliance of all activities conducted on the Installation and executive oversight for all aspects of the implementation of the Navy's Environmental Readiness Program as defined in reference (f). The host commander may delegate authority to tenant commands, but overall responsibility shall remain with the host commanding officer.

d. The Commander, NAWCWD is responsible for complying with environmental requirements for all RDAT&E activities conducted in accordance with references (b), (c), (d), (r) & (s), e.g. preparing and coordinating NEPA for projects conducted under their command authority and this agreement.

e. The NAWS Environmental Program Director and the NAWCWD Environmental Program Manager are the primary responsible parties for environmental program execution and shall work in close association as environmental professionals to ensure necessary coordination, information sharing and collaboration occurs between the commands.

3. Scope.

The intent of this agreement is to ensure that both parties have a common understanding of the environmental responsibilities that apply to their operations and the procedures that both parties will coordinate and execute to ensure that each is able to accomplish their respective mission in full compliance with all applicable laws and regulations relating to the protection of the environment. The scope of this agreement applies to the implementation of the parties' responsibilities as provided in references (a) through (s).

4. Authority.

Authority to enter into this agreement is provided in reference (f).

5. Agreements and Responsibilities.

a. All NAWCWD and NAWS China Lake civilian, military, and contractor personnel working onboard NAWS China Lake shall comply with all applicable Federal, State and local environmental statutes and regulations, as well as the requirements of Presidential Executive Orders, Department of Defense (DoD) and Navy policies, regulations and requirements.

b. All applicable Federal, State and local environmental, natural resource and cultural resource permits approvals and consultations will be obtained for the construction and operation of facilities and ranges, and for actions related to test and training operations. All personnel and contractors shall comply with the terms and conditions imposed by permits and approvals at NAWS China Lake.

c. All NAWCWD activities that propose a new action or a change to the type, intensity or location of a previously authorized activity shall be coordinated and discussed with the Environmental Management Division (EMD) prior to implementing the proposed action or change to the operation. NAWCWD and NAWS China Lake will work together per reference (o) to determine if supplemental NEPA documentation is needed and/or if consultation with a regulatory agency is required.

d. In accordance with references (d), (e), (f), (g) and (k), the Commanding Officer, NAWS China Lake is responsible for managing all lands at China Lake, maintaining environmental compliance for all activities conducted on-station that have the potential to impact resources on China Lake lands, and exercising responsible stewardship of these public lands. The Commander, NAWCWD is responsible for conducting all aspects of its RDAT&E military mission and complying with applicable environmental directives and guidance. Per reference (g), all lands at NAWS China Lake are dedicated to meeting the current and evolving Navy readiness mission. To support and implement this policy NAWS China Lake and NAWCWD will process land use decisions in accordance with references (j), (k) and (l) to manage on-station land uses to accomplish the military mission, ensure environmental compliance, and maintain agency and public trust through responsible land stewardship practices. On-station lands are all Class 1

property within the installation boundary including fee owned, withdrawn, leased and permitted real property.

e. The Commanding Officer, NAWS China Lake will:

(1) Ensure that the Environmental Management Division (EMD) is staffed and trained to support and manage environmental requirements of installation and tenant command mission activities to the extent those activities have the potential to affect installation resources.

(2) Serve as the Navy executive for coordinating and securing required permits, except those permits secured under other Department of Navy authorities, e.g., RASO; conducting formal and informal consultations; and obtaining approvals with Federal, State and local regulatory officials. Agency consultation and/or coordination involving NAWCWD actions will include NAWCWD representation, and related documents will be provided to NAWCWD for review prior to submission. NAWS China Lake will also provide copies of executed permits, responses from regulators and other third parties, and agreements to NAWCWD.

(3) Serve as the Navy executive in all Government to Government and Native American meetings and consultations between Native American groups and Federally-recognized Indian Tribes. Host command will notify NAWCWD prior to initiating a meeting or consultation with a Native American group or Federally-recognized Tribe if the meeting or consultation involves matters germane to NAWCWD operations. NAWCWD may participate in Tribal discussions on matters relating to NAWCWD activities as required by the host command.

(4) Integrate environmental planning and compliance requirements into all levels of activity management through the application of program management policies and procedures, including oversight, inspection, reporting and identification of compliance issues.

(5) Coordinate proposed new or revised NAWS CL environmental policies, procedures, directives, instructions, notices, and guidance with and solicit input from NAWCWD prior to issuing.

(6) Provide, in coordination with NAWCWD, formal training programs on environmental compliance and protection of natural and cultural resources to all personnel conducting activities that could impact the environment at NAWS CL.

(7) Ensure the initial planning, review, comment, approval, and endorsements of NAWCWD NEPA documents, including emergent requirements, is accomplished in accordance with references (i) and (o), their successors and established protocols. Emergent requirements will receive expedited environmental review and compliance attention, as is practicable and in accordance with all applicable law and policy.

(8) Share all environmental data related to NAWCWD operations with NAWCWD. Statutorily protected/confidential data will be managed in accordance with established protocol and applicable regulatory requirements.

(9) Serve as the action proponent for Shore Installation Management (SIM) actions at China Lake relating to Class I and II property and land use management decisions.

(10) Coordinate and integrate planning and implementation of the installation Environmental Management System (EMS) with NAWCWD. NAWS China Lake will implement the EMS in accordance with reference (n).

f. The Commander, NAWCWD will:

(1) Comply with all host command environmental policies, procedures, directives, instructions, notices, and guidance.

(2) Coordinate environmental planning and compliance requirements for all actions taking place on NAWS China Lake under the cognizance of its command authority with NAWS China Lake.

(3) Plan, program and budget for compliance with all Federal, State and local laws for the protection of the environment for all actions taking place under the cognizance of its command authority on NAWS China Lake. This includes maintaining an adequate staff of environmental coordinators formally trained to support and manage NAWCWD operations to ensure compliance.

(4) Provide, in coordination with NAWS China Lake, formal training programs on environmental compliance and protection of natural and cultural resources to all NAWCWD personnel who have operational responsibilities that could impact the environment.

(5) Conduct environmental analyses for all command sponsored actions (test, training, infrastructure & facilities) and submit through the applicable review and approval or concurrence processes in accordance with references (e), (f), (i), (j), (k), (l), (m), (o), and (q) prior to implementing the action; and serve as the NEPA action proponent for command sponsored actions in accordance with references (b), (c), (d), (r), and (s).

(a) Perform initial environmental reviews of ongoing test, training and related infrastructure activities by designated environmental coordinators. The outcome of this preliminary environmental review is the preparation of a Record of Environmental Review (RER) or the determination that a NEPA document is required. RERs and NEPA documents must be supported by a complete and accurate Project Description, which contains the best available data at the time. RERs and NEPA documents will be processed in accordance with reference (o) and its successors.

(b) Provide NEPA environmental planning documents, to include Records of Environmental Review, Categorical Exclusions, Environmental Assessments, Findings of No Significant Impact, Environmental Impact Statements and Records of Decision to the Commanding Officer NAWS China Lake or his designee, for review and endorsement in accordance with references (f), (i), (k), and (o), and successor documents, prior to the proposed action taking place. Documents will be provided with sufficient lead time to complete a

technically defensible review of the action, to conduct regulatory consultation, if required, to ensure compliance is maintained without impacting operational schedules.

(c) Prepare and submit to NAWS China Lake data reflecting compliance with permit, regulatory or other mitigation and reporting requirements.

(6) Share all environmental resource data, such as biological and cultural resource survey results, with NAWS China Lake. Comply with requirements for maintaining the security of statutorily protected/confidential data.

(7) Participate as needed with NAWS CO in Government to Government and Native American consultations between Native American groups and Federally-recognized Indian Tribes regarding matters related to NAWCWD operations.

(8) Ensure support and participation with NAWS China Lake in planning and implementing EMS requirements including coordination on audits and compliance assessments. NAWCWD will participate in the NAWS EMS in accordance with reference (n).

(9) Consult with EMD to develop an acceptable scope of work prior to the submittal of a procurement request, task order, or other means of service acquisition on NAWCWD activities requiring environmental studies/surveys. Environmental studies or surveys will be conducted at NAWS China Lake with review and approval from EMD. All related draft and final field data, reports, maps and geospatial data shall be submitted to EMD in accordance with SOPs.

(10) Integrate environmental, natural resource and cultural resource requirements into all levels of activity management through the application of program management procedures, including oversight, inspection, and identification of compliance issues.

g. Other Environmental Compliance Responsibilities

(1) Hazardous Waste Management: NAWCWD will manage hazardous waste according to applicable regulations and NAWSCL procedures. Proper management of hazardous waste includes, but is not limited to, NAWCWD applicable personnel involved in hazardous waste management are trained, records are maintained, and accumulation areas are established and maintained. NAWCWD will allow NAWSCL, Navy, and regulatory inspections and audits of workspaces for proper hazardous waste management. NAWCWD will provide adequate funding to maintain hazardous waste storage and treatment permits and facilities, along with applicable data and expertise needed to maintain these permits. NAWCWD will provide adequate funding for regulatory fees for hazardous waste management, fines/penalties caused by NAWCWD, and disposal of NAWCWD hazardous waste.

NAWCWD will provide required data for NAWSCL to complete the reports and related documentation. As part of this data, NAWCWD will maintain hazardous material inventories (type, quantity and usage), munitions/ordnance usage from testing and training, and range clearance activities, including amounts of Material Potentially Presenting an Explosive Hazard

(MPPEH) removed, stored, processed and recycled. MPPEH will be managed in accordance with reference (m).

NAWSCL will provide technical assistance and procedures for implementation of regulations as well as establish, maintain, and provide training for hazardous waste management. NAWSCL will maintain hazardous waste storage and treatment permits.

(2) Pollution Prevention: NAWCWD, in consultation with NAWSCL, will initiate pollution prevention activities. This includes, but is not limited to, increased efficiency in the use of raw material, energy, water, or other resources. Life cycle hazardous material control and management is essential part of pollution prevention. Recycling activities will also be considered, if pollution prevention is not feasible. These activities will be safe to implement, cost effective, and logistically viable. NAWSCL will provide technical assistance to evaluate and implement pollution prevention and recycling activities. NAWCWD will provide hazardous material inventory data, along with quantities and usage, as required to comply with applicable directives.

(3) Air Quality Compliance and Permitting: NAWCWD will coordinate with NAWSCL prior to beginning or modifying any operations or equipment subject to Clean Air Act (CAA) regulations, and will assist NAWSCL in preparing any necessary permit application(s). NAWCWD will comply with all permit conditions, including materials/operating restrictions and recordkeeping requirements. NAWCWD will submit materials/hours/throughput data to NAWSCL for compliance reporting and related purposes. NAWCWD will allow NAWSCL, Navy, and regulatory inspections and audits of workspaces and other operating areas for compliance monitoring. NAWCWD will provide adequate funding for any equipment upgrades, process improvements, recordkeeping, and other CAA-related requirements imposed by federal, state, or local regulatory agencies. NAWCWD will provide adequate funding for regulatory fees, permit fees, and fines/penalties resulting from NAWCWD operations. NAWS China Lake will coordinate all permits involving NAWCWD actions with NAWCWD, and provide related documents to NAWCWD for review prior to submission. NAWS China Lake will also provide copies of executed permits, consultations, and agreements to NAWCWD.

NAWS China Lake is the technical lead for the air quality program and will provide technical guidance for CAA-related regulations, and assist NAWCWD in complying with these regulations and advance planning to meet future regulations. NAWS China Lake will provide formal training for NAWCWD employees to ensure compliance.

(4) Water Quality Compliance and Permitting: NAWCWD will comply with all aspects of the Safe Drinking Water Act and NAWS China Lake Water Conservation Program goals and objectives.

NAWS China Lake will provide related information regarding water quality compliance and conservation to NAWCWD and provide management oversight to comply with all aspects of the Safe Drinking Water Act and water conservation policies.

After the first year, the Agreement will be reviewed by the signatories or their successors for modification to the original agreement and development of any additional annexes.

8. Termination/Expiration.

This agreement may be terminated by mutual consent of both parties.

This agreement will remain in effect until six years from the date of signature.

9. Effective Date.

This agreement will become effective upon completion of signatures.

10. Approvals.

William D. French, RADM, USN
Commander,
Navy Region Southwest

9/20/10
(date)

M. W. Winter, RDML, USN
Commander,
Naval Air Warfare Center Weapons Division

9/20/10
(date)

Appendix D.

NAWSCL Target and Test Areas, from NAWCWD Operational Requirements Document, 2013

Baker Range Target and Test Areas

Name	Description	Target/Test Area	High Explosive (HE) Use	Buffer
Baker Range Operation Area (Op Area)	General Baker Range	n/a	Yes	n/a
B-1B/B-1C	Historically bladed and cleared area	Target	No	200 m
B-1A	Historically bladed and cleared area	Target	Yes	200 m
B-1D	Historically bladed and cleared area	Target	No	200 m
B-1F	Historically bladed and cleared area	Target	Yes	200 m
B-2	Historically bladed and cleared area	Target	Yes	200 m
B-2 counter-improvised explosive device (CIED)	CIED test area	Test	No	None
B3/B3 CIED	Historically bladed and cleared area	Target	Yes	200 m
B-4	Sled track facility, accidental release sled track facility and target, calibration track, general purpose test area	Test	Yes	100 ft CE PR241/367
Baker BIP	Range clearance and CIED testing area	Test	Yes	Test Dependent
LB	Support facilities and target areas	Target	Yes	200 m
Sandy Van	Precision guided munitions (PGM) target	Target	No	200 m
Condor TC-4 Complex	PGM target	Target	No	200 m
Condor TC-2	PGM target	Target	No	200 m
Midas West	Paved instrumentation site	Test	No	None

Charlie Range Target and Test Areas

Name	Description	Target/Test Area	HE Use	Buffer
Charlie Range Op Area	General Charlie Range	n/a	Yes	n/a
C-1	Historically bladed and cleared area	Target	Yes	200 m
C-2	Historically bladed and cleared area	Target	Yes	200 m
C-3 #1	Historically bladed and cleared area	Target	Yes	200 m
C-3 #2	Historically bladed and cleared area	Target	Yes	200 m
C-3 SAM Site	Air-to-surface target	Target	Yes	200 m
FLR-3	Weapon impact area	Target	No	200 m
North Charlie Target	Weapon impact area & launch/firing area	Target	Yes	Reduced buffer – Command decision
Supersonic Naval Ordnance Research Track (SNORT)	Sled track facility & target area Maximum net explosive weight (NEW) of 50,000 lbs. 1) 2,500 lb. NEW North Detonation Site 2) 700 lb. NEW West Target Yard & VBAR Track 3) 70 lb. NEW Ejection Seat Test Area	Test	Yes	200 m

Airport Lake Target and Test Areas

Name	Description	Target/Test Area	HE Use	Buffer
Airport Lake	Large target playa with associated target roads and surrounding area	Target	Yes	200 m
HABR	Multiple weapon impact areas throughout the Coso Wash drainage area	Target	Yes	200 m
Sams Town	Large bladed and cleared weapon impact area	Target	Yes	200 m
Stormville	Weapon impact area	Target	Yes	200 m
Convoy Complex	Weapon impact areas	Target	Yes	200 m
G-4	Sled track facility and target areas Maximum net explosive weight (NEW) of 30,000 lbs.	Test	Yes	200 m
Gun Butts	Weapon impact area	Target	Yes	200 m
Maverick Road	Target road complex and weapon impact area to the north of Maverick Road and to the shore of Airport Lake	Target	Yes	200 m
Maverick Road Drop Zone	Drop zone	Target	No	200 m
Vaby	Weapon impact area and instrumentation site	Target	Yes	200 m

George Range Target and Test Areas

Name	Description	Target/Test Area	HE Use	Buffer
PMTC	Cleared and bladed weapon impact areas	Target	Yes	200 m
FAE	Cleared and disked weapon impact area	Target	Yes	200 m
Shrike	Distributed target complex	Target	No	200 m
G-6	Surface launch facility and weapon impact area (including Deadman Canyon, phalanx gun test site, and firing fan area to the west)	Target	No	200 m
Bull pup	Distributed target complex	Target	Yes	200 m
X-3 Centerline	Target areas (inclusive of roadways), includes G-1/G-2 weapon impact areas and external ballistics range impact areas	Target	Yes	200 m
G-9	Cleared and bladed weapon impact area	Target	No	200 m
G-1	Weapon impact area	Target	Yes	200 m
G-2	Surface launch facility and weapon impact area	Target	Yes	200 m
GZAP	Cleared and bladed weapon impact area	Target	Yes	200 m
Hans Site	Cleared and paved instrumentation site	Test	No	None
Drop Zone	Cleared and disked weapon impact area	Target	Yes	200 m
J-90	Surface-to-surface launch facility	Test	No	None
JCAT	Joint Combat Assessment Team training area	Training	No	None
Kennedy Stands	Weapon impact area	Target	Yes	200 m
3”/5” Impact Areas	Weapon impact areas	Target	Yes	200 m
Midas East	Paved instrumentation site	Test	No	None

Name	Description	Target/Test Area	HE Use	Buffer
Mountain Springs Canyon	Borrow Pit test area in Mountain Springs Canyon	Test	No	None
Sweetwater Wash	Drop zone	Target	No	200 m
Tower 11 Gun Line	Large caliber gun firing line & target	Test	No	200 m
PMT West	Cleared and bladed weapon impact area	Target	Yes	200 m
Pole Target	Weapon impact area	Target	Yes	200 m
RAMEX	Bullet impact complex	Test	No	None
Redeye Complex	Surface-to-surface or surface-to-air target impact area	Target	Yes	200 m
Sandia	Penetrator test site	Test	Yes	200 m
K-2 Gun Range	Live fire survivability range. Includes Hostile Fire Indication Remote Test Site	Test	Yes	None
HIVAS HIVAS 2 LFT&E	Test site for aircraft live fire survivability/lethality, aerodynamic, and cook-off tests, and remote controlled run-up and operation of aircraft, sea vehicles and/or missile engines and components; 50 lbs. net explosive weight (NEW)	Test	Yes	None
Minideck	Flight deck simulated environment. Up to 240,000 gallons/year burned	Test	No	None
Burn Room	Testing of fire fighting reagents on small scale fires	Test	No	None
Area R	Warhead Test Sites, Includes Barricades 1-8. NEW: - 100 lbs Barricades 1 & 2 - 150 lbs Barricade 6 - 200 lbs Barricades 3-5	Test	Yes	1,000 ft (Barr 3-5)
6” Gun Test	Small scale detonations/bullet impact testing	Test	Yes	100 ft
Thompson Lab (includes Pearson Lab)	Small Scale Detonation testing	Test	Yes	100 ft

Name	Description	Target/Test Area	HE Use	Buffer
Burro Canyon	Ordnance test and evaluation test areas and open burn/open detonation facility	Test	Yes*	200 m
ALAST	Laser guidance & optical system target	Test	No	None

* Right side of Burro Canyon is the open burn/open detonation facility used to treat explosive hazardous waste. The facility has a permitted NEW of 50,000 lbs. Left side of Burro Canyon is an ordnance T&E test area with a NEW limit up to 20,000 lbs used for warhead performance testing.

Coso Range Target and Test Areas

Name	Description	Target/Test Area	HE Use	Buffer
Coso Target Complex	Military target areas	Target	No	200 m
Coles SAM Site	Weapon Impact area	Target	Yes	200 m
ELOY Site	Weapon impact area	Target	No	200 m
Lower Cactus Flats	Ordnance/Warhead Detonation Site; Counter-Improvised Explosive Device (CIED) 30,000 lbs net explosive weight (NEW)	Test	Yes	200 m
Upper Cactus Flats	Ordnance/Warhead Detonation Site; CIED 200,000 lbs. NEW	Test	Yes	200 m

Coles Flat Target and Test Areas

Name	Description	Target/Test Area	HE Use	Buffer
Coles Flat	Distributed target complex	Target	No	200 m
Coles Flat Counter-Improvised Explosive Device (CIED)	CIED test site	Test	No	None
Safeway	Cleared and bladed weapon impact area	Target	Yes	50 m
Ship Site (Wild Horse Mesa)	Weapon impact area	Target	Yes	200 m
Drop Zone	High altitude simulated drops/recovery zone	Target	No	200 m
CP-42	Explosive Ordnance Disposal Training Area/Weapon Impact Area	Test	Yes*	200 m

*Use of HE at CP-42 may require additional NEPA documentation prior to use.

Darwin Wash Target and Test Areas

Name	Description	Target/Test Area	HE Use	Buffer
Joint Counter-Improvised Explosive Device (JCIF) Facility	Linear test facility	Test	No	None
Explosive Ordnance Disposal Training & Evaluation Unit One (EODTEU-1)	Naval Expeditionary Combat Command Training Complex	Training	Yes	None
Box Canyon	Explosive test arena and electromagnetic test area; 50 lbs. net explosive weight	Test	Yes	200 m

Junction Ranch Target and Test Areas*

Name	Description	Target/Test Area	HE Use	Buffer
South 40 (including S40 Roadway)	Radar cross-section (RCS) horizontal range; electromagnetic and general purpose test facility	Test	No	None
Junction Ranch House Complex	Electromagnetic and general purpose test site	Test	No	None
North 40	Look down RCS range; electromagnetic and general purpose test facility	Test	No	None
17 Degree Lookdown	Approved test site near Tennessee Springs	Test	No	None
Parrot Peak	Electromagnetic and general purpose test site and instrumentation sites	Test	No	None
EVR Drop Zone	Drop zone	Target	No	200 m
Shot-put Arena	Electromagnetic and general purpose test site	Test	No	None
GPS Arena	Electromagnetic and general purpose test site	Test	No	None
PRFE Site	High-Power Microwave Testing	Test	No	None

*All Junction Ranch test sites are both electromagnetic and general purpose test sites.

Randsburg Wash Range Target and Test Areas

Name	Description	Target/Test Area	HE Use	Buffer
Air Force	Electronic warfare (EW) test site	Test	No	None
Bear	EW test complex	Test	No	None
Fuse Range	Proximity fuse range	Target	Yes	200 m
Gun Range	Large caliber gun firing range and target area	Target	Yes	200 m
Ghost	EW test site	Test	No	None
Garcia Site	EW test site	Test	No	None
North Tower Site	Test/target area used for suspension of ordnance or other test items	Test	Yes	200 m
South Tower Site	Ordnance test site	Test	Yes	200 m
Igloo	Large scale detonation range	Test	Yes	200 m
Electronic Warfare Sites	Distributed EW test sites throughout South Range, including hilltops, roads, and sites used by mobile assets	Test	No	None
Charlie Airfield	Weapon impact area	Target*	Yes	200 m
C-130 Strip	Remote expeditionary airfield and decoy recovery area	Target	No	200 m
Drop Zone	Simulated in-theater air drops and recovery area north of C-130 Strip	Target	No	None
Unmanned Aerial Vehicle (UAV) Site	Remote UAV airstrip and hangar	Test	No	None
Land Sites 1 – 4	EW test site complexes; unmanned aerial system/unmanned ground systems	Test	No	None
Wicker Site	EW test site	Test	No	None
Star	EW test site	Test	No	None

Name	Description	Target/Test Area	HE Use	Buffer
Fresh Site	EW test site	Test	No	None
Flash Site	UV laser stimulation testing; UAS/UGS; counter-improvised explosive device test area	Test	No	None
Marine	EW test site	Test	No	None
MOM	EW testing complex	Test	No	None
Northwest Site	EW test site	Test	No	None
Parking Lot	Signature measurement parking lot with surrounding track for mobile targets	Test	No	None
Photo Knob	EW test site – portable units; ground troop training observation point	Test	No	None
TSPI	EW test site	Test	No	None
Tower 9	EW test site	Test	No	None
SS-1	EW test complex (includes Collimation Tower)	Test	No	None
SS-2	EW test complex	Test	No	None
SS-3	EW test complex (includes Collimation Tower)	Test	No	None
YS-1	EW test site	Test	No	None
HP Drop Zones	Simulated drops/recovery zone	Target	No	300 yd. radius
Pole Site	EW test site	Test	No	None
Potts Peak	EW test site	Test	No	None
No Name Site 1 (NNS1)	EW test site	Test	No	None
No Name Site 2 (NNS2)	EW test site	Test	No	None
NATO	EW test complex (includes Collimation Tower)	Test	No	None

Name	Description	Target/Test Area	HE Use	Buffer
Bunker Site	EW test site	Test	No	None
Bunkers Radar Site	EW test site	Test	No	None
TACAN	EW test complex (includes ROTR 6)	Test	No	None

*Historical targets at Charlie Airfield inadvertently not included in 2004 FEIS. Use of historical target areas not included in FEIS will require additional NEPA documentation.

Mojave B North Target and Test Areas

Name	Description	Target/Test Area	HE Use	Buffer
Wingate Airfield	Simulated airfield target	Target	Yes	200 m
Kim Site	Developed instrumentation test site	Test	No	None
Brown Mountain	Electronic warfare (EW) test site	Test	No	None
Convoy Complex	Weapon impact area	Target	No	200 m
HP Drop Zones	Simulated equipment drops	Test	No	200 m
Johnson Mine	Weapon impact area (target)	Target	Yes	200 m
John Site	EW test site	Test	No	None
Electronic Warfare Sites	Distributed EW test sites throughout South Range, including hilltops, roads, and sites used by mobile assets	Test	No	None
Layton Pass	EW test site	Test	No	None
Slate Range	EW test site	Test	No	None
Straw Peak	EW test site	Test	No	None

Mojave B South Target and Test Areas

Name	Description	Target/Test Area	HE Use	Buffer
Air Force A/B/C	Historical open burn/open detonation site and impact areas	Target	No	None
Superior Valley	Target and Training Complex	Target	Yes	200 m
Pyramid Peak	EW test site	Test	No	None
PHOTO Target	Weapon impact area	Target	No	200 m
Electronic Warfare Sites	Distributed EW test sites throughout South Range, including hilltops, roads, and sites used by mobile assets	Test	No	None

Ordnance T&E and Propulsion Lab Area

Test Area	Test Area Description	HE Use	Net Explosive Weight (NEW) Limits	Buffer
Aero heat (T-Range)	Sea-level, air-breathing engine and aero thermal test facility	Yes	Energetic Material up to 249 lbs and 5,000 lbs Liquids up to 2,000 lbs Max of 100,000 lbs of thrust	None
CBAT M3 Test Bay	Contained burn test chamber	Yes	Solid Propellants up to 50,000 lbs	None
Coliseum (Warhead	Open detonation and warhead site	Yes	Energetic Material up to 10,000 lbs	200 m
CT-1*	Cook-off and detonation site	Yes	Energetic Material up to 2,000 lbs	315 ft
CT-3*	Contained burn test chamber	Yes	Energetic Material up to 200 lbs of Category 1.1 or 400 lbs of Category 1.3	None
CT-4*	Cook-off, bullet impact, fragment impact, and drop tower sites	Yes	Energetic Material up to 5,000 lbs	427 feet
CT-6	Gun, open detonation site, VERA	Yes	Energetic Material up to 3,000 lbs Liquid Propellants up to 10,500 lbs	427 feet
Small-Scale Cook-off Facility	Small-scale cook-off	Yes	5 lbs Category 1.1, 1.3, or 1.4	n/a
Detonation Mechanics - Outdoor Firing Bay	Energetic Testing	Yes	15 lbs Category 1.1, 1.3, or 1.4	100 ft
Test Bays I, II, IIA, III, VI, VII, Boondocks, and Launch Test Facility (LTF)	Propulsion and launch test facilities	Yes	Energetic Material up to: ➢ 10,000 lbs at Bay II ➢ 11,000 lbs at Bay I ➢ 205,000 lbs at Bays IIA, III, VI, VII, and Boondocks ➢ 500 lbs at LTF	None
Guntub Bay	Small scale energetic testing site	Yes	3 lbs	236 feet
Outdoor Firing Bay B-12510	Small scale energetic testing site	Yes	15 lbs	404 feet

Test Area	Test Area Description	HE Use	Net Explosive Weight (NEW) Limits	Buffer
Test Bay IV	Hypergolic fueling/defueling facility	Yes	Energetic Material up to 18,000 lbs Liquids and Hypergolic up to 80,000 lbs	None
Test Bay VIII	Plume and propulsion test site	Yes	Energetic Material up to 10,000 lbs	None

*All NEW limits are for Explosives Category 1.1 with the exception of CT-3, Small-scale Cook-off Facility, and Detonation Mechanics - Indoor/Outdoor firing Bay. CT Sites are also permitted for consumption of various types of fuels.

Appendix E.

Naval Air Weapons Station China Lake Range Access Policy, 2003

Naval Air Weapons Station China Lake
Range Access Policy

January 2003

THE RANGE ACCESS POLICY

The Naval Air Weapons Station (NAWS) China Lake allows access to its ranges when possible. This policy allows groups or individuals access to certain areas on the ranges for limited recreational purposes and scientific research that benefits the Station. Such access is contingent on non-interference with operational commitments and is subject to cancellation without advance notice due to operational, safety, security, environmental, and fiscal considerations.

Scientific research has included geological and cultural resource surveys, archaeological excavations, site examinations, earthquake monitoring, bird counts, and insect studies. Any group or individual seeking access for such research must have professional or academic standing in the field of study, and the results of the study must be shared with the Station.

Recreational access on the ranges includes petroglyph tours, camping at Birchum Springs, and day-time hikes up B Mountain. All petroglyph tours and camping requests are subject to approval and require at least two Command-approved tour guides. Hikes up B Mountain are restricted to individuals who have the proper access requirements or are joining a Command-authorized event.

Petroglyphs are found throughout NAWS China Lake.

PROCESS FOR OBTAINING ACCESS

Organizations or individuals seeking access for research need to submit their request in writing to the Public Affairs Office, Code 750000D, 1 Administration Circle, China Lake, CA 93555-6100. The request should include the organization or individual requesting access, what professional or academic organization is being represented, the purpose of the visit, the location being requested, what is being proposed and why (benefits), the number of people requesting access, possible dates for access, and the type of product the Station will receive at the end of the research period.

Petroglyph tours are grouped into two types – public and private. Call the Public Affairs Office at 760.939.1683 to request a packet for details on how to arrange a tour.

Overnight camping at Birchum Springs normally is approved only in conjunction with a petroglyph tour or research trip, and approval is on a case-by-case basis. Due to heightened security restrictions, not many requests will be approved.

NAWS continually reviews its access policy. For specific input on an activity or area that may be of interest to the general public, please submit a request to the Public Affairs Office.

FOR MORE INFORMATION

For more information regarding public access, contact the Public Affairs Office at 760.939.1683.

Appendix F.

NAWS Environmental Review Process (ERP) Instruction 5090.6, 2013

DEPARTMENT OF THE NAVY
NAVAL AIR WEAPONS STATION
1 ADMINISTRATION CIRCLE
CHINA LAKE CA 93555-6100

NAWSINST 5090.6
PR24
8 Mar 13

NAWS INSTRUCTION 5090.6

From: Commanding Officer, Naval Air Weapons Station, China Lake

Subj: POLICY AND PROCEDURES FOR IMPLEMENTING THE ENVIRONMENTAL REVIEW PROCESS (ERP) FOR ACTIVITIES OCCURRING AT NAVAL AIR WEAPONS STATION (NAWS) CHINA LAKE

Ref:
(a) The National Environmental Policy Act (NEPA), 42 U.S.C. Sections 4321-4347
(b) 40 C.F.R. Parts 1500-1508, Council on Environmental Quality Regulations
(c) 32 C.F.R. Part 775, NEPA Implementation within the Navy
(d) SECNAVINST 5090.6A, Environmental Planning for DON Actions, 26 April 2004
(e) OPNAVINST 5090.1C Ch 1, CNO Environmental Readiness Program Manual, 18 July 2011
(f) SECNAVINST 5000.2C, Operation of the Defense Acquisition System
(g) COMNAVREGSWINST 5090.3A Procedures for Coordinating and Implementing the National Environmental Policy Act, 12 August 2009
(h) NAWS Comprehensive Land Use Management Plan, May 2005
(i) Memorandum of Agreement between Commander, Navy Region Southwest and Naval Air Warfare Center Weapons Division, 20 September 2010

Encl:
(1) Operation and Compliance Flow Chart
(2) Procedures for Preparing a Memorandum for the Record
(3) Operations Environmental Review Flow Chart
(4) Sample Delegation of Authority Letters for MFRs

1. Introduction. Naval Air Weapons Station (NAWS) China Lake is able to achieve its core mission when environmental planning is properly integrated and sequenced into decision-making for those actions that have the potential to affect the environment.

This requires advance planning and early coordination within and outside the Installation and the preparation of quality and consistent NEPA documents that achieves a balance between resource use and mission. Quality NEPA documents avoid undesirable and unintended environmental degradation, risk to health and safety, or other consequences. Coordination between the action proponent and other interested parties and stakeholders is necessary for the preparation of accurate, consistent, timely, and cost-effective documentation that supports the mission. Enclosure (1) depicts the lines of operational and compliance accountability.

2. Applicability. This instruction is consistent with all applicable statutes, regulations, Executive Orders, Department of Defense Directives and Instructions, and Department of the Navy (DoN) Instructions and sets policy and procedures for implementing the Environmental Review Process (ERP) for activities occurring at NAWS China Lake, hereinafter referred by the short title of NAWS NEPA Instruction. This instruction establishes NAWS China Lake procedures for implementing the National Environmental Policy Act (NEPA), 42 U.S.C. Sections 4321-4347 requirements. It is applicable to all Navy and Non-Navy activities, Installation Tenants, Visiting Organizations, Military, Civilian, and Contract Personnel (Activity/Action Proponent) that conduct activities onboard NAWS China Lake. Compliance with this instruction is mandatory.

3. Purpose. This instruction establishes the policy, procedures and responsibilities for implementing a comprehensive environmental planning program for all activities/actions conducted onboard NAWS China Lake and its associated ranges in accordance with references (a) through (i). Implementation of this initial environmental review process ensures that all applicable environmental planning and compliance requirements are completed prior to and in support of; Research, Development, Acquisition, Test, and Evaluation (RDAT&E), training, infrastructure and other land management activities supporting the successful accomplishment of the missions and activities carried out at NAWS China Lake.

4. Background. NEPA requires federal agencies to utilize a systematic, interdisciplinary analysis process to examine the potential environmental implications of proposed actions/ activities prior to their execution. The NAWS China Lake ERP supports Navy mission and compliance goals by incorporating environmental planning improvements to implement an informed decision support process. This refined environmental planning

framework clarifies analysis methods, defines working relationships of personnel authorized by the NAWS China Lake Commanding Officer to perform environmental planning functions at NAWS China Lake and facilitates an effective and efficient procedure for supporting current and evolving mission requirements in compliance with applicable requirements.

5. Definitions of Terms

a. Activity/Action Proponent. The representative of any unit, activity, or organization who initiates a proposed action and/or has operational control over the implementation of the activity/action.

b. Categorical Exclusion (CATEX). A CATEX is a published category of actions, references (c) through (e), which do not individually or cumulatively have a significant impact on the human environment under normal circumstances, and, therefore, do not require either an Environmental Assessment (EA) or an Environmental Impact Statement (EIS). A CATEX may be used to exclude a proposed action from further analysis. The DoN list of approved CATEX's can be found in chapter five of reference (e). Even though a proposed action generally is covered by a listed CATEX, a CATEX will not be used if the proposed action:

(1) Would adversely affect public health or safety;

(2) Involves effects on the human environment that are highly uncertain, involve unique or unknown risks, or which are scientifically controversial;

(3) Establishes precedents or makes decisions in principle for future actions that have the potential for significant impacts;

(4) Threatens a violation of Federal, State, or local environmental laws applicable to the DoN; or

(5) Involves an action that, as determined in coordination with the appropriate resource agency, may:

(a) Have an adverse effect on Federally-listed endangered/threatened species;

(b) Have an adverse effect on Federally-designated wilderness areas or wildlife refuges;

(c) Adversely affect the size, function or biological value of wetlands and is not covered by a nation-wide or regional permit;

(d) Have an adverse effect on archaeological resources or resources (including but not limited to aircraft and equipment) listed or determined eligible for listing on the National Register of Historic Places; or

(e) Result in an uncontrolled or unpermitted release of hazardous substances, or require a conformity determination under the standards of the Clean Air Act General Conformity Rule.

c. Continuing Activity. Per reference (d), any activity that:

(1) Began before January 1970 and that has continued substantially in the same manner and environment; or

(2) Began after 1970, for which the requisite environmental planning has been completed, and that has continued in substantially the same manner and environment.

(3) For the purposes of this instruction, a Continuing Activity is any action that has been previously analyzed and approved under a valid NEPA document (CATEX, EA or EIS) per reference (e).

d. Environmental Assessment (EA). A concise public NEPA document prepared according to the requirements of reference (b), which briefly provides sufficient evidence and analysis for determining whether to prepare an EIS. Where a proposed major Federal action has the potential for significantly affecting the human environment, but it is not clear whether the impacts of that particular action will in fact be significant, or where the nature of an action precludes use of a CATEX, an EA may be used to assist the agency in determining whether to prepare an EIS. If the agency determination in the case of an EA is that there is no significant impact on the environment, the findings will be reflected in a Finding of No Significant Impact (FONSI). If the EA determines that the proposed action is likely to significantly affect the environment (even after mitigation), then an EIS will be prepared. An EA also may be used where it otherwise will aid compliance with NEPA.

e. Environmental Coordinator (EC). A person assigned the responsibility by the NAWS Commanding Officer to perform initial environmental reviews of projects conducted or overseen by their organization. Designated ECs review their organization's activities to determine if proposed projects are consistent with valid NEPA documents (CATEX, EA, EIS). Designated ECs prepare and sign Memorandums For Record (MFR) and collaborate in the preparation of the draft CATEXs for activities in accordance with this Instruction. Designated ECs are assigned the responsibility for ensuring that project descriptions are complete and accurate, and/or ensuring that all mitigation actions required by the relevant supporting NEPA document are fully communicated to the Responsible Party in accordance with this Instruction and other applicable guidance.

f. Environmental Impact Statement (EIS). An environmental document prepared according to the requirements of reference (b) for a major action which will have a significant effect on the quality of the human environment or that are potentially controversial in environmental effects. The agency decision in the case of an EIS is reflected in a Record of Decision (ROD).

g. Finding of No Significant Impact (FONSI). An environmental decision document which sets out the reasons why an action not otherwise categorically excluded will not have a significant impact on the human environment, and for which an EIS will not therefore be prepared. A FONSI will include the EA or a summary of it and shall note any other environmental documents related to it. A FONSI may be one result of review of an EA.

h. Initial Environmental Review. The analysis performed by an authorized environmental planner or Designated EC to determine if a proposed project or activity is consistent with a valid NEPA document (CATEX, EA, EIS).

i. Memorandum For Record (MFR) of Environmental Review. A document produced by a Designated EC that describes the status of coordination and review for a proposed action that would occur within an existing Navy range complex with approved NEPA and environmental planning documentation and regulatory consultation and coordination. MFR's shall be written in accordance with enclosure (2) and serve as an administrative record that proposed actions have undergone the initial environmental review process. There are two types of MFR's:

(1) Programmatic MFR (PMFR). A PMFR confirms that a continuing activity of a recurring nature with little or no potential to affect protected environmental resources and is covered by a valid NEPA document.

(2) Standard MFR (SMFR). An MFR that documents a continuing activity that contains or may contain a ground disturbing component with the potential to impact the environment, and is covered by a valid NEPA document.

j. Mitigation Measure. Mitigation is a specific activity or specification that would lessen or reduce environmental impacts to some degree and that can be implemented, enforced, and its effectiveness evaluated. There are five types of accepted mitigation measures:

(1) Avoiding the impact altogether by not taking a certain action or parts of an action.

(2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

(3) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.

(4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.

(5) Compensating for the impact by replacing or providing substitute resources or environments.

k. Record of Decision (ROD). An environmental decision document signed by an appropriate official of the DON. A ROD provides a concise summary of the final decision and the environmental impacts indentified in the Final EIS and selected measures for mitigation (if any) of adverse environmental impacts of the alternative chosen from those considered in an EIS.

l. Responsible Party. A Responsible Party is a participant with the assigned position and authority by their respective command to verify Project Descriptions (PD) and/or assume responsibility for the implementation of required mitigation.

6. Policy

a. All projects and activities conducted at NAWS China Lake are required to undergo an environmental review prior to project execution to ensure these undertakings fully comply with applicable laws, regulations, and directives in accordance with reference (e) or successor documents. The NAWS China Lake ERP shall apply to all new projects, changes to existing projects (type, location, intensity, etc.) and to testing, training scenarios, and facility and infrastructure actions conducted at NAWS China Lake.

b. The NAWS China Lake Commanding Officer is solely responsible for making environmental compliance decisions onboard NAWS China Lake.

c. The EMD at NAWS China Lake lead by the Environmental Program Director (EPD) serves as the Commanding Officer's environmental technical lead and ensures that all environmental activities occurring at China Lake are compliant with existing laws, regulations and Installation Management Plans. The EPD was delegated Commanding Officer authority to sign CATEXs for routine projects or activities conducted at NAWS China Lake.

d. Host and tenant commands, visiting personnel, and support contractors conducting activities at NAWS China Lake shall fully comply with all of the Installation's environmental compliance policies and procedures.

e. Host and tenant activities are integral to the Installation's environmental compliance efforts. They are expected to fully participate, appropriately staff and adequately resource all efforts required to implement these policies and procedures. The lack of provision of necessary resources will negatively impact operational or facility project timing and costs.

f. Completion of initial environmental reviews and applicable MFRs for all RDAT&E, training, facility and infrastructure activities conducted at NAWS China Lake shall be conducted by personnel authorized by the Commanding Officer and performed in accordance with this instruction.

g. Tenant commands may elect to have an EC designated by the Commanding Officer who will be responsible for completing initial environmental reviews.

h. In accordance with reference (e), all activities conducted on established test and target impact areas,

designated training areas, and facility and infrastructure footprints previously approved in a valid NEPA document require the preparation of a MFR. Guidance for preparing MFRs is provided in enclosure (2). MFRs are submitted to NAWS EMD by designated ECs for inclusion in the NAWS China Lake administrative record. MFRs provide one component of Navy audit-ready compliance monitoring.

i. Action Proponents that propose a change to the type, intensity or location of a previously authorized activity shall consult with the appropriate EC prior to implementing the proposed change. The Designated EC will coordinate that information with EMD Staff.

j. Any authorized facility, infrastructure, test event, training event, or related activity which has an unintended impact on the environment outside an approved operating area will be categorized as an "unplanned event." Specific details regarding an unplanned event will be immediately communicated by the activity EC or Responsible Party to the EMD. EMD will review and evaluate the situation to determine if supplemental NEPA documentation is required. EMD will also consult with Counsel or outside regulatory agencies as required. In the remote event that EMD staff cannot provide real-time technical support due to resource constraints, EMD will work with the Responsible Party to resource the necessary support to accomplish the mission.

k. Activity Proponents should recognize that all projects/activities differ somewhat in complexity and that NEPA document preparation times for those projects will vary depending on the scope of the proposed action and the level of environmental analysis required. Some activities that require permits or approvals granted by other federal or state regulatory agencies will require additional time and effort to secure. The first level of NEPA documentation (CATEX) normally takes 90 days to prepare. The second level (EA) generally takes 18 months to prepare. The third level (EIS) takes an average of four (4) years to complete.

l. In order to support the warfighter's evolving needs and ensure ongoing and emerging operations or facility projects meet scheduled milestones, the EMD shall respond to all requests for environmental review within 10 working days.

m. Incoming ERP work is processed by EMD in the order it is submitted, however, the EMD will support priority requests as scheduled workload and available support capabilities permit.

n. Acceleration of EMD ERP support may be possible for verified emergencies or time sensitive mission operations subject to the validation of the support requirement by proponent Command representative and subject to the availability of sufficient resources to support the emergent requirement.

o. For those activities or actions where the required environmental review is not performed or where adequate documentation is not submitted to EMD, the NAWS China Lake Commanding Officer has the authority to stop the action from further progression until the required Installation ERP is satisfied. A stop work order and/or permission to resume the action will require written notification by the Commanding Officer or EPD to the Responsible Party and EC.

p. If a PD for a continuing activity does not meet the minimum requirements of enclosure (2) in order to complete the MFR, the EC or EMD will notify the Action Proponent to resolve the information shortfall.

q. Situations that require conflict resolution are expected to be worked at the lowest staff level possible, between EC's and Subject Matter Experts (SMEs) in EMD. If the staff fails to reach a satisfactory agreement, Senior Management is expected to resolve the issue. Only in extreme cases where no resolution is possible between the staffs will the issue be elevated to Command level for arbitration. This will be considered a professional failure of both staffs.

7. Roles and Responsibilities

a. The NAWS China Lake Commanding Officer shall:

(1) Establish policy and issue specific procedural guidance consistent with higher regulations/directives for implementing environmental planning requirements to appropriately address activities occurring onboard NAWS China Lake and its associated ranges.

(2) Assume and exercise responsibility for land use decisions and environmental compliance of all activities/actions occurring onboard NAWS China Lake and its associated ranges.

(3) Ensure the level of environmental planning and related documents are appropriate for all proposed activities/actions occurring onboard NAWS China Lake and its associated ranges.

(4) Ensure that all environmental planning documents are appropriately reviewed and endorsed in a timely manner.

(5) Serve as the Navy's Executive for external coordination with regulatory agencies, Native American Tribes, non-government agencies and the public to ensure a consistent position is maintained on environmental planning matters.

(6) Delegate responsibility to qualified personnel (using enclosure (4)) for completing initial environmental reviews and issuing the applicable documentation.

b. The NAWS China Lake EPD and EMD shall:

(1) Implement and manage the NAWS China Lake ERP in accordance with this instruction.

(2) Provide determinations on the proper level of environmental planning and related documents for all proposed activities/actions occurring onboard NAWS China Lake and its associated ranges.

(3) Review for accuracy and technical sufficiency all analyses, determinations of effect for all proposed activities/actions occurring onboard NAWS China Lake and its associated ranges.

(4) Prepare and/or endorse of Records of CATEX for qualifying projects and provide endorsement recommendations to the Commanding Officer for environmental assessments and environmental impact statements in accordance with reference (g).

(5) Monitor and maintain an administrative record documenting the successful execution of required mitigation measures to ensure compliance with applicable regulations.

(6) The EPD will advise the Commanding Officer on the requested expansion of delegated authority for EC's who have demonstrated a thorough knowledge of this instruction and proficient application of NEPA documentation as applied to proposed activities/actions.

(7) Provide technical support as needed to EC's in the preparation, review, and submittal of MFRs.

c. NAWS China Lake Commanding Officer-Designated EC shall:

(1) Perform the ERP as described in this instruction and in accordance with Commanding Officer delegation of authority.

(2) Ensure complete and accurate PDs are secured from Activity/Action Proponents prior to the application of the NAWS China Lake ERP.

(3) Prepare and issue the appropriate MFR in accordance with enclosure (2).

(4) Coordinate change in the scope of the project activity (type, tempo, location, etc.) with an EMD NEPA Coordinator to support EMD determination if additional NEPA documentation, agency consultation or permitting is required.

d. Activity/Action Proponents shall:

(1) Provide the appropriate Designated EC or EMD NEPA Coordinator with an accurate and complete PD of every planned activity/action (new project, changes to existing projects (type, location, intensity, etc.) RDAT&E or training event, infrastructure) in a timely manner to facilitate the required initial environmental review and meet proposed execution schedule/s.

(2) Coordinate scope changes in type, tempo, location, etc. of the project activity with the Designated EC or an EMD NEPA Coordinator prior to implementing the proposed activity change/s.

(3) When assigned as the Responsible Party, ensure the required environmental planning mitigation requirements applicable to the proposed activity are fully implemented and documentation of successful mitigation execution per reference (e) Sections 5-1.7.5 and 5-1.7.9 is submitted to EMD for inclusion with the administrative record in accordance with pertinent directives.

8. Procedures

a. Designated ECs shall implement the NAWS China Lake's ERP for activities conducted or supported by their organizations. Enclosure (3) depicts the work flow in support of NAWS China

Lake's ERP. The standard operating procedure for the EC performing an initial environmental review is as follows:

(1) Secure an accurate and complete PD from the Action Proponent.

(2) Review and analyze the PD to determine which of the following descriptions are applicable:

(a) The proposed action qualifies as a Continuing Activity that does not contain a ground component or cause new ground disturbance, is consistent with applicable permits to operate, has little or no potential to impact the environment, and is covered by a valid NEPA document;

(b) The proposed action qualifies as a Continuing Activity that contains a ground component that has some potential to impact the environment (i.e., ordnance use in RDAT&E, or training activities; test or training operations with overland foot traffic requirements, etc) and is covered by a valid NEPA document or previously approved Record of Environmental Review; or,

(c) The proposed action is a new or modified undertaking that is not covered by an existing approved and valid NEPA document or the ground component has significantly changed (type, tempo, location, etc.).

b. If the proposed action qualifies as a Continuing Activity, as described in paragraph 8.a.(2).(a) above, and meets the appropriate authorizing PMFR criteria, the EC shall electronically approve the activity and submit a bi-weekly PMFR to EMD via the electronic repository for inclusion in the administrative record.

c. If the proposed action qualifies as a continuing activity that contains a ground component that has some potential to impact the environment, as described in paragraph 8.a.(2).(b) above, and is covered by a valid NEPA, the Commanding Officer Designated EC or EMD NEPA Coordinator will issue a SMFR in accordance with enclosure (2).

d. If a proposed action is a new or modified undertaking that is not covered by a valid NEPA document or the ground component of the activity has changed, as described in paragraph 8.a.(2).(c) above, the EC will discuss the activity with EMD subject matter experts. The EMD subject matter expert and EC

will determine the appropriate NEPA document (CATEX, EA, or EIS) required. In the case where a CATEX may be used, the EC and EMD subject matter experts will jointly prepare the CATEX for issuance. In the case where an EA or EIS is required, Commander Navy Region Southwest (CNRSW) will be notified and the preparation of the appropriate NEPA document (EA or EIS) will be prepared in accordance with reference (g).

e. The standard operating procedure for issuance of a CATEX is as follows:

(1) The EMD NEPA Coordinator and designated EC shall jointly prepare a draft CATEX once a complete and accurate PD and acceptable technical support data have been received. Designated ECs are responsible for submitting the PD and recommending applicable mitigation measures. EMD SMEs are responsible for evaluating the potential environmental effects of the project or activity and concurring with or coordinating revisions to proposed mitigation measures.

(2) A copy of the draft CATEX will be routed to EMD and the EC's command for review and comment. Participant's comments are coordinated and incorporated in a final CATEX.

(3) The final CATEX is routed for signature by the following individuals:

(a) Action proponent Responsible Party: The Responsible Party will validate the project description and/or assume the responsibility to ensure that all required mitigation measures will be fully implemented over the course of the activities duration.

(b) Action Proponent Command Representative: The Command Representative will authorize the CATEX.

(c) NAWS China Lake Commanding Officer or EPD: The Commanding Officer or EPD will endorse for approval prior to the activity being executed aboard NAWS China Lake. The CATEX will be retained in Command files and made available for review during Environmental Compliance Evaluations.

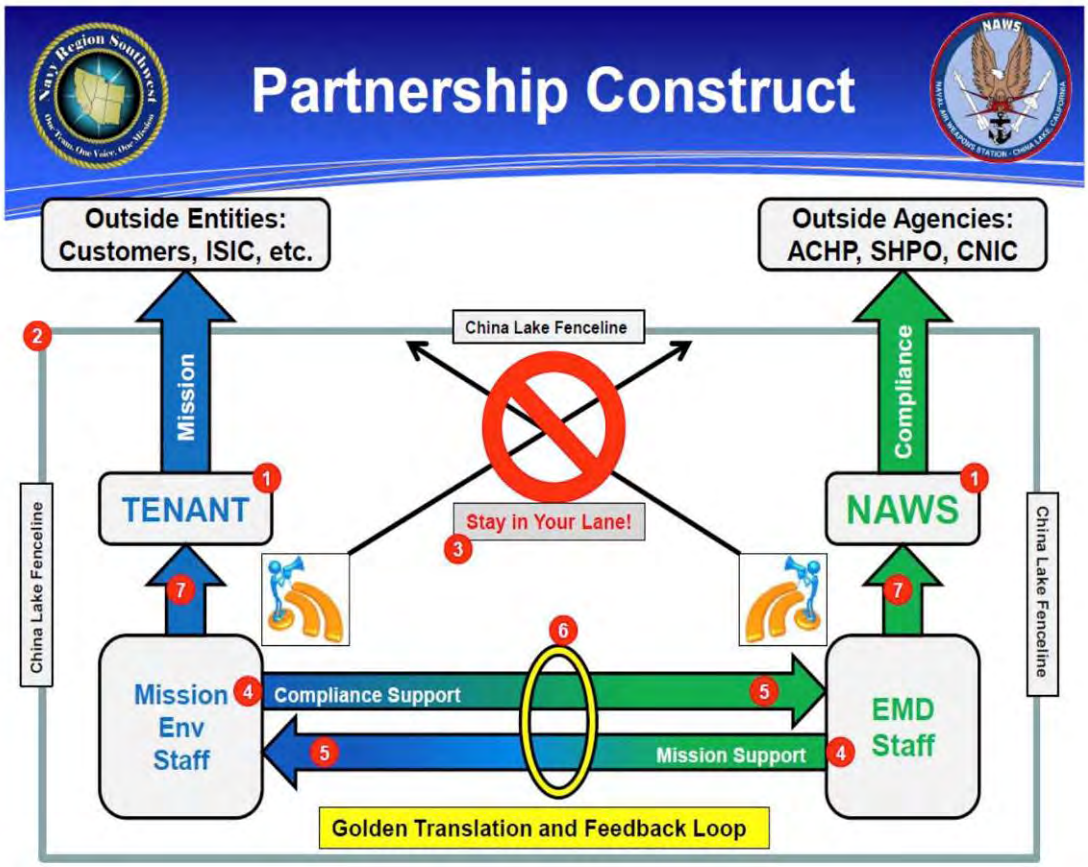
f. EAs and EISs are required for those projects or undertakings that do not qualify for a MFR or a CATEX and will be executed in accordance with the procedures contained in reference (g).

g. MFRs will be maintained on file by NAWS EMD and in a shared electronic repository to support the administrative record for the proposed activity in accordance with NEPA requirements for review during Environmental Compliance Evaluations.

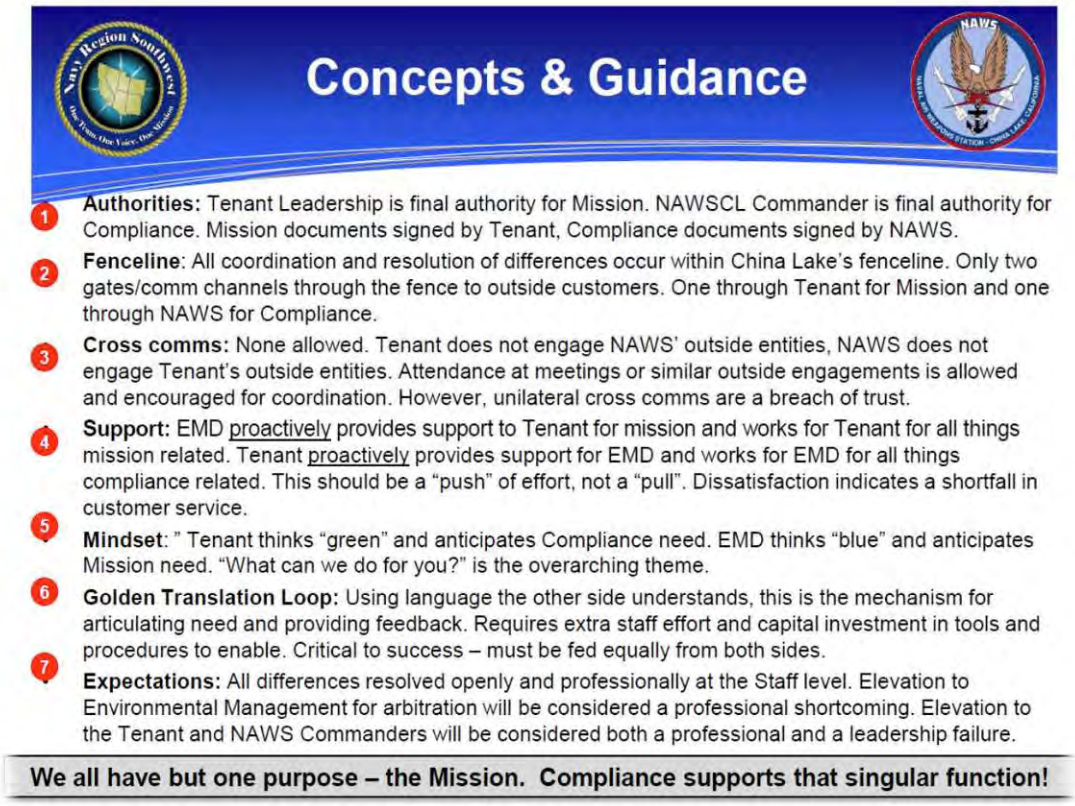
9. Directive Responsibility. The NAWS China Lake Environmental Program Director (Code PR241) is responsible for keeping this instruction current.

D. A. LAZAR

Distribution:
Electronic only, via NAWS Directive Website
https://g2.cnic.navy.mil/tscnrsw/NAWSCHINALAKECA/N00/N04C/Lists/Links/AllItems.aspx


Partnership Construct
Outside Entities:
Customers, ISIC, etc.
Outside Agencies:
ACHP, SHPO, CNIC
Mission
Compliance
China Lake Fenceline
TENANT
NAWS
Stay in Your Lane!
China Lake Fenceline
China Lake Fenceline
Mission
Env
Staff
Compliance Support
Mission Support
EMD
Staff
Golden Translation and Feedback Loop

Enclosure (1)


Concepts & Guidance
1 Authorities: Tenant Leadership is final authority for Mission. NAWSCL Commander is final authority for Compliance. Mission documents signed by Tenant, Compliance documents signed by NAWS.
2 Fenceline: All coordination and resolution of differences occur within China Lake's fenceline. Only two gates/comm channels through the fence to outside customers. One through Tenant for Mission and one through NAWS for Compliance.
3 Cross comms: None allowed. Tenant does not engage NAWS' outside entities, NAWS does not engage Tenant's outside entities. Attendance at meetings or similar outside engagements is allowed and encouraged for coordination. However, unilateral cross comms are a breach of trust.
4 Support: EMD proactively provides support to Tenant for mission and works for Tenant for all things mission related. Tenant proactively provides support for EMD and works for EMD for all things compliance related. This should be a "push" of effort, not a "pull". Dissatisfaction indicates a shortfall in customer service.
5 Mindset: " Tenant thinks "green" and anticipates Compliance need. EMD thinks "blue" and anticipates Mission need. "What can we do for you?" is the overarching theme.
6 Golden Translation Loop: Using language the other side understands, this is the mechanism for articulating need and providing feedback. Requires extra staff effort and capital investment in tools and procedures to enable. Critical to success – must be fed equally from both sides.
7 Expectations: All differences resolved openly and professionally at the Staff level. Elevation to Environmental Management for arbitration will be considered a professional shortcoming. Elevation to the Tenant and NAWS Commanders will be considered both a professional and a leadership failure.
We all have but one purpose – the Mission. Compliance supports that singular function!

Enclosure (1)

NAWSINST 5090.6
8 Mar 13

Standard Memorandum for the Record:

DATE

From: (Designated EC or EMD NEPA Coordinator by Name and Title)
To: Record

Subj: MEMORANDUM FOR RECORD IN SUPPORT OF (INSERT ACTIVITY) EVENT (SHORT TITLE OF EVENT)

Ref: (a) (Governing Valid NEPA Documentation) (e.g. 2004 FEIS, specific CATEX or EA, etc)
(x) (Other Governing Valid NEPA Documentation) (Maybe none or more than one)
(x+1) NAWSINST 5090.6
(x+2) NAWS China Lake 2005 CLUMP

Encl: (1) Map of Area of Potential Impact (API)

1. Project Description (Provide a complete and accurate unclassified description of the proposed action and expected activities) to include:

a. The type of activity (weapons impact High Explosive or Inert, facility alteration, imaging, etc.)

b. Support requirements (stationary/mobile targets; instrumentation arrays; use of, or generation of, hazardous materials; ingress/egress routes for equipment setup; lay-down areas; etc.)

c. Enclosure (1) illustrates the Area of Potential Impact (API). (The maps must illustrate the location of the activity, projected hazard patterns, buffer zones and areas used for support operations (instrumentation locations, material storage, ingress/egress routes for equipment setup, etc.) associated with the activity.)

d. Expected operational tempo of the activity (number of ops over time).

e. Start date of project activity.

f. Points of Contact (Designated Environmental Coordinator and/or Responsible Party).

2. It has been determined that the proposed activity conforms to valid NEPA documents, reference (a) to (x) and meets the

1

Enclosure (2)

definition of MFR per reference (x+1). Any NEPA document over five years old has been evaluated to affirm continued validity of analysis for future decision-making. Additionally, the subject event is also in conformance with valid land use management objectives as defined in reference (x+2).

3. Subject event meets the following conditions:

a. Project is a Continuing Activity as defined by reference (x+1).

b. Project area has been surveyed and inventoried for biological (except for approved test and target sites) and cultural resources consistent with existing laws, regulations, policies, agreements and installation management plans.

c. There are no eligible or unevaluated cultural sites located within the boundaries of the API that may be affected by the project.

d. The project area and proposed activity/action type is located within an existing defined area that has undergone an environmental review via a valid NEPA document.

e. There are no requirements for a new or modified regulatory permit/s (i.e. air quality).

4. Mitigation Measures: Personnel responsible for conducting the activity have been informed of the following applicable mitigation requirements that are identified in the referenced authorizing documentation and shall apply such measures in order to remain within compliance of the referenced and valid NEPA document. The following is a list of mitigation measures:

5. I certify that I have provided the applicable mitigation measures and/or standard operating procedures identified in the approving NEPA document to the Responsible Party.

Designated EC or EMD NEPA Coordinator

Programmatic MFR Certification:

Test and training events listed herein have been reviewed and they have been determined to be Continuing Activities as defined by 5090.1C Ch 1, Chapter 5-1.7.5 and are in conformance with the criteria set forth by (PMFR Analysis Memorandum Ser xxx, dated dd Mmm yy). It has also been determined that the proposed activities/actions are consistent with operations analyzed in the 2004 FEIS or other valid NEPA documents. These projects have been entered into the TRMS database as an event plan and/or other project data systems. By issuance of this PMFR, the requirements under OPNAVINST 5090.1C Ch. 1, Chapter 5-1.7.9 have been fulfilled.

Designated EC

NAWSINST 5090.6
8 Mar 13

DEPARTMENT OF THE NAVY
NAVAL AIR WEAPONS STATION
1 ADMINISTRATION CIRCLE
CHINA LAKE CA 93555-6100

5090
Ser PR241/
dd Mmm yy

From: Commanding Officer, Naval Air Weapons Station, China Lake
To: XXXX
Via: XXXX

Subj: RECORD OF CATEGORICAL EXCLUSION FOR XXXXX

Ref: (a) OPNAVINST 5090.1C CH-1 of 18 July 2011, Environmental Readiness Program Manual
(b) NAWS Notice of 3 Jun 10, Interim Policy and Procedures for Conducting Operational Environmental Planning at NAWS China Lake
(c) Comprehensive Land Use Management Plan (CLUMP), for the Naval Air Weapons Station, China Lake, CA of May 2005

Encl: (1) Site Map of Project Area
(2) xxxx
(3) Dust Control Requirements
(4) Waste Management Requirements

1. Project Description
The proposed project will…

2. Environmental Analysis of the Proposed Action

a. Biological Resources…

b. Cultural Resources…

c. Air Quality…

d. Hazardous Waste…

e. Environmental Justice…

3. Mitigation Measures

1

Enclosure (2)

The following mitigation measures must be fully implemented in accordance with reference (a) to ensure compliance and prevent adverse impacts to resources:

a. XXXX

b. XXXX

c. XXXX

d. Fugitive dust controls shall be implemented in accordance with enclosure (3).

e. All wastes that may be generated by the project and/or training shall be handled in accordance with enclosure (4). Any unusual odors or stained soil discovered at the training area must be reported immediately to the NAWS EMD and all work/training shall cease until the NAWS EMD evaluates the situation.

The Responsible Party assigned to ensure that all mitigation requirements as stipulated in Section 3 of this document are fully implemented is XXXX, who will also serve as the primary POC for coordination with the NAWS EMD.

4. CATEX Citation and Project Scope Provisions

a. Provided the project scope remains as proposed and all requirements are fully implemented, this project is in conformance with reference (c) and qualifies as a Categorical Exclusion as described in SECNAVINST 5090.6A Section 5(f)(xx) "xxxxxx". A Categorically Excluded Action does not require any additional environmental review at this time.

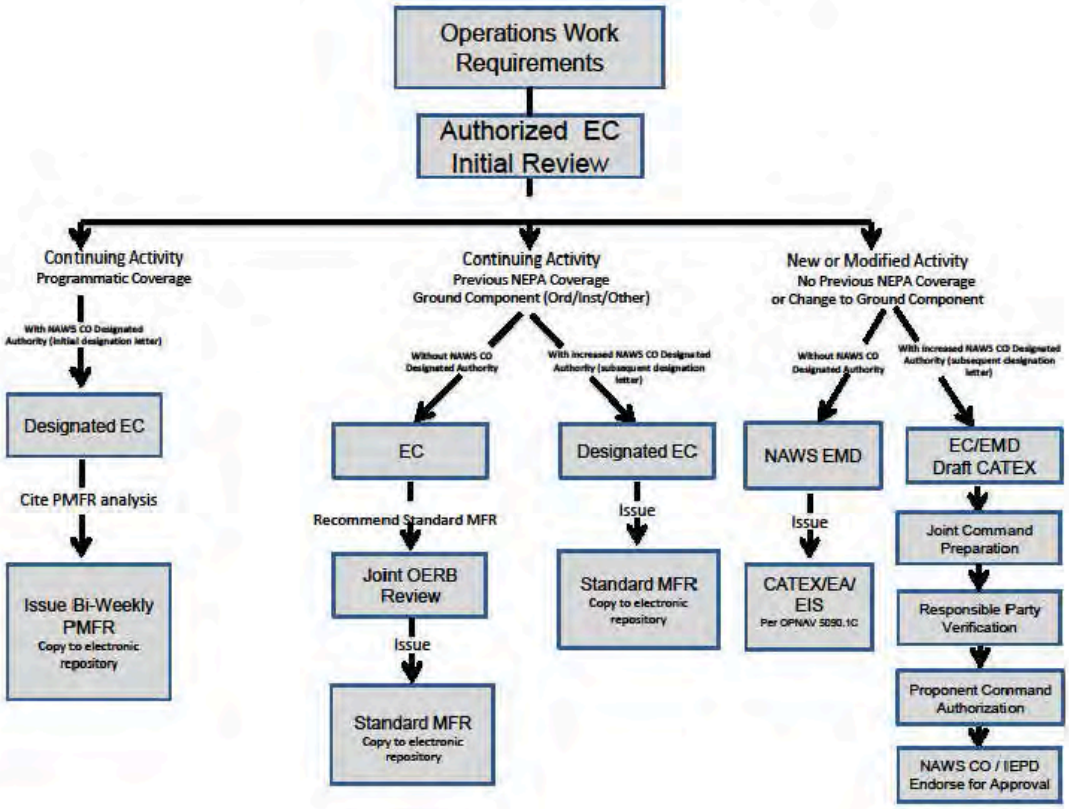
b. If any aspect of the project scope changes (location of project footprint, increase in scope, changes to lay down areas, additional land disturbing activities, etc.) or any mitigation action cannot be fully implemented, immediately consult with the NAWS EMD to make certain the project is reviewed to ensure compliance with all applicable environmental requirements.

c. This Record of Categorical Exclusion has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and the President's Council on Environmental Quality regulation implementing NEPA. This document fulfills the requirements for compliance with 40 CFR 1500-1508, and OPNAVINST 5090.1C CH-1 "Environmental Readiness Program Manual" of 18 July

2011, the applicable implementing regulations for NEPA. This document also serves as the "Record of Non-Applicability" for Conformity as required by reference (a) and complies with the requirements set forth in reference (b). If you have any questions or require additional information, please contact XXXX at 939-xxxx.

JOHN O'GARA
By direction

Copy to (w/encl):


Operations Work Requirements
Authorized EC Initial Review
Continuing Activity
Programmatic Coverage
With NAWS CO Designated Authority (initial designation letter)
Designated EC
Cite PMFR analysis
Issue Bi-Weekly PMFR
Copy to electronic repository
Continuing Activity
Previous NEPA Coverage
Ground Component (Ord/Inst/Other)
Without NAWS CO Designated Authority
With increased NAWS CO Designated Authority (subsequent designation letter)
EC
Recommend Standard MFR
Joint OERB Review
Issue
Standard MFR
Copy to electronic repository
Designated EC
Issue
Standard MFR
Copy to electronic repository
New or Modified Activity
No Previous NEPA Coverage
or Change to Ground Component
Without NAWS CO Designated Authority
With increased NAWS CO Designated Authority (subsequent designation letter)
NAWS EMD
Issue
CATEX/EA/EIS
Per OPNAV 5090.1C
EC/EMD Draft CATEX
Joint Command Preparation
Responsible Party Verification
Proponent Command Authorization
NAWS CO / IEPD Endorse for Approval

Enclosure (3)

NAWSINST 5090.6
8 Mar 13

DEPARTMENT OF THE NAVY
NAVAL AIR WEAPONS STATION
1 ADMINISTRATION CIRCLE
CHINA LAKE CA 93555-6100

N00
Date

From: Commanding Officer, Naval Air Weapons Station, China Lake
To: _____
Via: _____

Subj: DELEGATION AUTHORITY TO ISSUE ENVIRONMENTAL (PROGRAMMATIC AND/OR STANDARD MEMORANDUM FOR THE RECORD AND/OR JOINT CATEGORICAL EXCLUSION (CATEX))

Ref: (a) NAWSINST 5090.6

1. Per reference (a), you are hereby delegated the authority to issue (Programmatic and/or Standard Memorandum for the Record and/or joint CATEXs) for activities/actions pertinent to your organization on behalf of Naval Air Weapons Station, China Lake. You will familiarize yourself with the duties and responsibilities identified in reference (a).

2. As a condition of this delegation, you shall:

a. Conduct your duties and responsibilities in accordance with the policies and procedures in reference (a).

b. Provide a weekly report to NAWS EMD delineating all the Programmatic MFR's that were issued during that timeframe.

c. Provide NAWS EMD with an electronic copy of all Standard MFR's when endorsed for issuance and inclusion in an administrative record.

d. Collaborate in the preparation of joint CATEX.

e. Immediately notify NAWSCL and NAWS EMD of any unplanned events as defined in reference (a).

3. Your designation is not transferable and will remain in effect until you transfer from your position or is rescinded by letter.

D. A. LAZAR

Enclosure (4)

APPENDIX D

BIOLOGICAL RESOURCES

APPENDIX D
BIOLOGICAL RESOURCES

D.1 PLANT COMMUNITIES AT NAWS CHINA LAKE

Mojave Sand Field

Mojave sand field at NAWS China Lake is defined as areas where sand deposits are sufficiently deep to influence areas normally dominated by Mojave mixed woody scrub, creosote bush scrub, or saltbush scrub. Influences of sand fields or stabilized dunes usually reduce or exclude large shrubs with the exception of creosote bush (*Larrea tridentata*), which thrives and grows larger. Creosote clones (rings) are found most often in these areas. Extensive sand fields occur at NAWS China Lake in the southern Argus Range on the eastern side of NAWS China Lake. Elevations of these formations range from 2,200 feet (671 m) to 3,800 feet (1,158 m) above MSL. Perennials characteristic of Mojave sand field include freckled milkvetch (*Astragalus lentiginosus* var. *variabilis*), stillingia (*Stillingia spinulosa* and *S. paucidentata*), woolly star (*Eriastrum densifolium* ssp. *mohavense*), and birdcage primrose (*Oenothera deltoides*) (US Navy 1998b).

Alkali Sink Scrub

On NAWS China Lake, alkali sink scrub occurs where salt-tolerant plants grow as locally patchy covers. Alkali sink scrub is usually transitional between barren salt flats and saltbush scrub. Characteristic species of alkaline basin scrub include bush seepweed (*Suaeda moquinii*), Mojave red sage (*Kochia californica*), Parry saltbush (*Atriplex paryii*), pickleweed (*Allenrolfea occidentalis*), shrubby alkali aster (*Machaeranthera carnosa*), rubber rabbitbrush (*Chrysothamnus nauseosus*), allscale (*Atriplex polycarpa*), shadscale (*A. confertifolia*), and desert alyssum (*Lepidium fremontii* var. *fremontii*). Other perennials occur in alkaline basin scrub include four-wing saltbush (*Atriplex canescens*), Torrey saltbush (*A. lentiformis* var. *torreyi*), tamarisk (*Tamarix* sp.), Mojave indigo bush (*Psorothamnus arborescens* var. *arborescens*), desert horsebrush (*Tetradymia glabrata*), goldenbush (*Isocoma acradenia* var. *acradenia*), prince's plume (*Stanleya pinnata* var. *pinnata*), and saltgrass (*Distichlis spicata*) (US Navy 1998b).

Blackbush Scrub

This plant community is defined where blackbush (*Coleogyne ramosissima*) is dominant. This community occurs on hills, outcrops, and low ridges from 3,500 feet (1,067 m) to 6,500 feet (1,981 m) above MSL. At lower elevations, north slopes are favored. Species that are present with blackbush include Joshua tree (*Yucca brevifolia*), Mormon tea (*Ephedra viridis*), rubber rabbitbrush, and linear-leaved goldenbush (*Ericameria linearifolia*). On NAWS China Lake, blackbush scrub exists on both the North and South Ranges. Extensive stands of blackbush scrub are found in the central Argus Range near Moscow Spring, north of Birchum Springs, north and east of Junction Ranch, and east of Coles Spring on the North Range. On the South Range,

blackbush scrub appears on the north slopes of Slocum Mountain and extends northward to the Pilot Knob area (US Navy 1998b).

Creosote Bush Scrub

At NAWS China Lake, creosote bush grows from the lowest, well-drained, nonalkaline areas at 1,900 feet (579 m) to about 5,500 feet (1,676 m) above MSL. Above 3,500 feet (1,067 m) above MSL, however, creosote bush is present as an associated species within Mojave mixed scrub, shadscale scrub, Joshua tree woodland, and blackbush scrub communities. Creosote bush scrub covers extensive areas of NAWS China Lake, particularly in the valleys on both the North and South Ranges (US Navy 1998b). Common associate species in creosote bush scrub include burro bush (*Ambrosia dumosa*), shadscale, goldenhead (*Acamptopappus sphaerocephalus*), Mojave indigo bush, allscale, cheesebush (*Hymenoclea salsola* var. *salsola*), desert senna (*Senna armata*), and Anderson thornbush (*Lycium andersonii*) (US Navy 1998b, Holland 1986).

Desert Holly Scrub

Desert holly (*Atriplex hymenolytra*), is a patchy, but locally dominant, cover on NAWS China Lake. It usually occurs less than 3,000 feet (914 m) above MSL. Desert holly scrub is defined wherever desert holly is evenly distributed, dominant or codominant with creosote bush or other saltbush. Examples of desert holly scrub at NAWS China Lake are present in the White Hills, Salt Wells Valley, Randsburg Wash Road, Wingate Pass, and areas on the southern bajadas and foothills of Straw Peak (US Navy 1998b). The locations of this plant community are not shown in Figures 3.4-1 and 3.4-2, but are being mapped for future use.

Desert Transition Scrub

On NAWS China Lake, there are areas of shrub formations that are characteristic of the transition between the Great Basin and Mojave deserts. These ecotones often occur where canyons meet uplands, especially on the North Range. Desert transition scrub formations at NAWS China Lake are common between 4,000 feet (1,219 m) and 6,500 feet (1,981 m) above MSL. At NAWS China Lake, the presence of a few shrubs are characteristic of the Mojave-Great Basin transition. Linear-leaved goldenbush is the most characteristic shrub of desert transition scrub. Cottonthorn (*Tetradymia axillaris*) and western desert penstemon (*Penstemon incertus*) are also characteristic of desert transition scrub. Blackbush and Joshua tree are common associates (US Navy 1998b). The locations of this plant community are not shown in Figures 3.4-1 and 3.4-2, but are being mapped for future use.

Great Basin Mixed Scrub

Great Basin mixed scrub is defined where bitterbrush (*Purshia tridentata* var. *glandulosa*) is a codominant cover or a common associate with big sagebrush and Mormon tea. Great Basin mixed scrub is present in the northern and northeastern portions of the North Range in rocky areas from 5,000 feet (1,524 m) to 8,000 feet (2,438 m) above MSL. Great Basin scrub most often occurs between sagebrush scrub at the lower elevations and blackbush scrub at the higher

elevations. Common associate plant species in Great Basin mixed scrub include rubber rabbitbrush and Joshua tree (US Navy 1998b).

Hopsage Scrub

Hopsage scrub on NAWS China Lake occurs between 3,000 feet (914 m) and 5,000 feet (1,524 m) above MSL on both the North Range and South Range. Strongly dominated by spiny hopsage (*Grayia spinosa*), common associates in this community on NAWS China Lake include cheesebush, Anderson thornbush, four-wing saltbush, shadscale, and blackbush (US Navy 1998b).

Mojave Mixed Scrub

Mojave mixed scrub is present at higher elevations than creosote bush scrub in well-drained areas from 2,500 feet (762 m) to 5,500 feet (1,676 m) MSL. This plant community is defined where the upper zones of creosote bush scrub transition into shrub composites no longer clearly dominated by creosote bush and burrobush, and is an aggregate of numerous associations and highly variable elements with the highest diversity of plant species. Of all identified plant communities, Mojave mixed scrub occupies the largest percentage of land on NAWS China Lake and occurs in both the North Range and South Range. Mojave mixed scrub has elements common to desert transition scrub, saltbush scrub, hopsage scrub, Mojave wash scrub, Mojave sand field, and Joshua tree woodland. The most common form of Mojave mixed scrub at NAWS China Lake is usually a codominant composition of creosote bush, Cooper goldenbush (*Ericameria cooperi* var. *cooperi*), Mojave indigo bush, cheesebush, bladder sage (*Salazaria mexicana*), Anderson thornbush, hopsage, California buckwheat (*Eriogonum fasciculatum* ssp. *polifolium*), Mojave aster (*Xylorhiza tortifolia* var. *tortifolia*), Nevada ephedra (*Ephedra nevadensis*), wire lettuce (*Stephanomeria pauciflora* var. *pauciflora*), and Acton brittlebush (*Encelia actoni*) (US Navy 1998b).

Mojave Wash Scrub

Mojave wash scrub at NAWS China Lake typically occurs in areas surrounded by creosote bush scrub where washes provide extra moisture and create distinct shrub associations. These wash communities exist on both the North Range and South Range at the lowest elevations at NAWS China Lake and transition to Mojave mixed scrub at elevations of 3,000 feet (914 m) to 4,000 feet (1,219 m) above MSL. Depending on various hydrologic and geologic factors, dominant shrubs will vary. Cheesebush is the most characteristic shrub in low elevation washes, while higher elevations are dominated by scalebroom (*Lepidospartum squamatum*), four-wing saltbush, rubber rabbitbrush, Mojave indigo bush, and allscale (US Navy 1998b).

Sagebrush Scrub

On NAWS China Lake, this community occurs at elevations between 4,500 feet (1,372 m) and 6,000 feet (1,829 m) above MSL in the Coso and Argus ranges on the North Range. This plant community is not found on the South Range. The dominant shrub is big sagebrush (*Artemisia tridentata* ssp. *tridentata*). Sagebrush scrub is often occurs in sandy valleys, flats, and basins of

corresponding elevation where big sagebrush often forms sagebrush monocultures. These formations are common in Etcheron Valley and Coles Flat in the Coso Management Unit. Sagebrush scrub is often present as a subset of Great Basin mixed scrub where it is often associated with Joshua trees. Sagebrush scrub is also the dominant plant community on high elevation basalt lava flows where it is frequently associated with Mormon tea. Purple sage (*Salvia dorrii* var. *dorrii*) and matchweed (*Gutierrezia microcephala*) are sometimes common associates on basalt mesas in the central Argus Range; east of Birchum springs, surrounding Water Canyon; and west of Junction Ranch. Where washes or disturbances exist, big sagebrush will often be replaced with rubber rabbitbush and four-wing saltbush. Black sagebrush (*Artemisia nova*) replaces big sagebrush where geology, especially limestone, favors subshrubs (US Navy 1998b). In addition, sagebrush communities have a substantial herbaceous component dominated by perennial grasses, such as false roegneria (*Pseudoroegneria spicata* var. *spicata*), California brome (*Bromus carinatus* var. *carinatus*), ashy wildrye (*Leymus cinereus*), and needlegrass (*Achnatherum* spp.). In many areas, the introduced annual downy chess (*Bromus tectorum*) has become the dominant herbaceous species (US Navy 1998b).

Saltbush Scrub

Saltbush scrub on NAWS China Lake occurs at elevations less than 5,000 feet (1,524 m) above MSL. These areas on the North Range are located surrounding China Lake, Airport Lake, and Mirror Lake; and in the Salt Wells Valley and the Coso geothermal area. On the South Range, saltbush scrub is present in the Pilot Knob Valley, Wingate Wash, and Superior Valley. Saltbush scrub communities are defined by areas where allscale or spinescale (*Atriplex spinifera*) are the dominant cover shrub, often to the exclusion of all other shrub species. Common associates in saltbush scrub include other saltbush species, including shadscale, desert holly and four-wing saltbush. Torrey saltbush and Parry saltbush also occur in saltbush scrub, but are most typically associated with alkaline basin scrub. Allscale is the most widespread and abundant species of saltbush at NAWS China Lake. It often forms monocultures near riparian areas or at lower elevations bordering alkali playas and claypans (US Navy 1998b).

Shadscale Scrub

Shadscale scrub at NAWS China Lake is defined where shadscale is dominant. At NAWS China Lake, shadscale scrub usually exists over broad bajada slopes and basins between 3,500 feet (1,067 m) and 5,000 feet (1,524 m) above MSL on both the North Range and South Range. Shadscale scrub occurs in the lower Cactus Flats region, small basins within the Coso geothermal area, Darwin Wash, and lower Centennial flat. Shadscale scrub dominates the alluvial stretches north of NAWS China Lake throughout Darwin Mesa and Lee Flat. Frequently associated species include spinescale, Anderson thornbush, cheesebush, spiny hopsage, and desert alyssum (US Navy 1998b).

Joshua Tree Woodland

Joshua trees appear to be concentrated on NAWS China Lake from 4,000 feet (1,219 m) to 7,000 feet (2,134 m) above MSL in alluvial valleys, washes, and bowls upstream of major drainages, canyons and playas, such as upper Renegade Wash, southwest Etcheron Valley, and

Lower Centennial Flat. Joshua trees occur on both the North Range and South Range, but are most prominent on the North Range. Joshua trees are present with saltbush scrub in Superior Valley; creosote bush scrub in the northeast and west Coso Mountains; shadscale scrub in Centennial Flat, northwest Argus Mountains, and the Slate Range; blackbush scrub northeast of Mountain Springs and at PK Ranch in George Range; sagebrush scrub in Etcheron Valley and Coles Flat; Great Basin mixed scrub throughout the Coso and Argus ranges; and on the fringes of pinyon woodland (US Navy 1998b).

Pinyon Woodland

Pinyon woodland at NAWS China Lake is defined where singleleaf pinyon pine (*Pinus monophylla*) grows in moderate to dense stands. Pinyon woodland is usually present above 6,500 feet (1,981 m) above MSL, on north slopes, drainages, and peaks of the Coso and Argus ranges. Above 7,500 feet (2,286 m) above MSL, singleleaf pinyon pine is usually dense and dominant regardless of geology or aspect. Big sagebrush, Mormon tea, and bitterbrush are the most frequent associates of pinyon woodland (US Navy 1998b).

Playa

The playa plant community occurs in areas ranging from seasonal pools to flooded alkaline basins, which are normally barren but become flooded seasonally and produce dense to patchy growths of annuals. In the desert, only wet years will reveal any specialized annuals or biennials characteristically associated with a playa shore edge. NAWS China Lake has numerous dry lakes, playas, and clay depressions ranging from small clay depressions and pools in the basalt flows at 7,500 feet (2,286 m) above MSL in the northern Coso Range to alkaline and semialkaline playas in Salt Wells and south Panamint Valleys at 1,900 feet (579 m) above MSL and 1,400 feet (427 m) above MSL, respectively. In years of abundant rainfall, annuals such as devil's lettuce (*Amsinkia tessellata*), tumble mustard (*Sisymbrium altissimum*), and pineapple weed (*Chamomilla suaveolens*) can form dense areas of cover on the perimeters of depressions, pools, and playas. One of the more prominent examples of playa vegetation at NAWS China Lake is at the northern end of Airport Lake, which supports a field of tumble mustard and devil's lettuce (US Navy 1998b). The locations of this plant community are not shown in Figures 3.4-1 and 3.4-2, but are being mapped for future use.

Riparian

Riparian communities are present where there are plants that require a permanent source of water or a substantial ephemeral flow. Riparian communities are highly restricted, well-defined areas characterized by aquatic herbs, grasses, tall shrubs, and trees in active growth stages in the summer. Typical riparian areas at NAWS China Lake consist of various vegetation patches, each dominated by a single species, usually at springs and seeps. This habitat can consist of dense stands of willow (*Salix* spp.), Fremont cottonwood (*Populus fremontii* var. *fremontii*), seepwillow (*Baccharis sergiloides*), and rushes (*Juncus* ssp.), but plant species range with elevation and hydrology at a particular site (US Navy 1998b). The locations of this plant community are not shown in Figures 3.4-1 and 3.4- 2, but are being mapped for future use.

Disturbed

This plant community represents habitats characterized by certain invasive or non-native species. These plant communities result from disturbance, such as human activities, overuse by feral domestic species, fires, rapid erosion, or flash flood, which replaces the existing plant community with a specific composition of disturbance-favoring plants. Some non-native plant communities are a cover series dominated by woody shrubs, but the majority are dominated by herbaceous, mostly annual plants (US Navy 1998b). Examples of species that are common in these disturbed habitats are devil's lettuce; tumbleweed (*Salsola tragus*) which are the annual cover at target areas; annual ragweed (*Ambrosia acanthicarpa*) which occurs along roads; and non-native grasses such as annual cheatgrass and downy chess (*Bromus madritensis* ssp. *rubens*) which are present throughout NAWS China Lake (US Navy 1998b). The golf course and landscaped urban areas are considered disturbed habitats. The locations of this plant community are not shown in Figures 3.4-1 and 3.4-2, but are being mapped for future use.

D.2 TABLES OF NAWS—SENSITIVE PLANT AND WILDLIFE SPECIES KNOWN OR SUSPECTED TO EXIST AT NAWS CHINA LAKE

Table D-1
NAWS-Sensitive Plant Species Known or Suspected to Exist at NAWS China Lake

Species Common Name *Scientific Name*	Land Use Management Units (LMU)	North or South Range Complex/ specific loci	Elevation (feet above MSL)	Associated Plant Community at NAWS China Lake	Status Federal/State/CNPS Or Reason for NAWS-Sensitive Species
Plants Confirmed at NAWS China Lake					
Great Basin onion *Allium atrorubens* var. *atrorubens*	CF	North 6 km SE of Coso Pk, SE of Coso village site, N. tributary to She-Cat Spring, WSW of Darwin Spr. NAWS	3,960-7,640 ft	Pinyon-Juniper woodland, Great Basin scrub	--/--/2.3
Pinyon rock cress *Arabis dispar* (*Boechera* d.)	CF	North 0.5 mi NE of Cole Spring-Coso Pk Rd 2 mi NE of Silver Pk., So. of Etcheron Vy.,Birchum Mesa, El Conejo gate.	4,000-8000 ft	Pinyon woodland, Great Basin mixed scrub, sagebrush scrub, Joshua tree woodland, blackbush scrub, desert transition scrub	--/--/2.2
Darwin Mesa milkvetch *Astragalus atratus* var. *mensanus*	CN, CS, CF, CG, G	North 1 mi ENE of Mill Spring	5,800-7,800 ft	Pinyon woodland, Great Basin mixed scrub, sagebrush scrub, Joshua tree woodland, blackbush scrub	--/--/1B.1
Booth's camissonia *Camissonia boothii* ssp. *boothii*	CAF, CG, B, CN, CF, CS, JR, G	North ~ 3.6 mi W of Trona	300-700 ft	Joshua tree woodland, Pinyon and juniper woodland	--/--/2.2

Species Common Name *Scientific Name*	Land Use Management Units (LMU)	North or South Range Complex/ specific loci	Elevation (feet above MSL)	Associated Plant Community at NAWS China Lake	Status Federal/State/CNPS Or Reason for NAWS-Sensitive Species
Desert bird's-beak *Cordylanthus eremicus* ssp. *eremicus*	CN, CF, CS, JR, G	North Etcheron Vy., Birchum Campground	4,900-8,400 ft	Pinyon woodland, Great Basin mixed scrub, sagebrush scrub, Joshua tree woodland, blackbush scrub, desert transition scrub	--/--/4.3
Clokey's cryptantha *Cryptantha clokeyi*	G, SV, MS, RW	South Summit Pilot Knob, south ranges NAWS: Granite Pk, Slocum Mt.	200-400 ft	Mojavean desert scrub	--/--/1B.2
Desert cympoterus *Cymopterus deserticola*	RW	South NE of Cuddeback Lane, Pilot Knob allotment	200-500 ft	Joshua tree woodland, Mojavean desert scrub	--/--/1B.2
Panamint dudleya *Dudleya saxosa* ssp. *saxosa*	MS	South Pilot Knob NAWS	290-670 ft	Mojavean desert scrub, Pinyon and juniper woodland	--/--/1B.3
Pinyon Mesa buckwheat *Eriogonum mensicola*	CN	North 1.5 mi. SE of Coso Pk.	7,244 ft	Pinyon-Juniper woodland, Great Basin scrub	--/--/1B.3
Panamint Mountains buckwheat *Eriogonum microthecum var panamintense*	JR	North 1.5 mi SE of Maturango Peak	6,237-10,725 ft	Pinyon-Juniper woodland, Subalpine coniferous forest	--/--/1B.3
Yerba desierto *Fendlerella utahensis*	DW	North Maturango Peak area	4,900-8,400 ft	Pinyon woodland, Great Basin mixed scrub, desert transition scrub	--/--/4.3
Inyo hulsea *Hulsea vestita* ssp. *inyoensis*	CN, JR	North So. of Crystal Spr, Coso Range	500- 6070 ft	Chenipod scrub, Great Basin scrub, Pinyon and juniper woodland	--/--/2.2
Creosote clones *Larrea tridentata*	G	North Wilson Canyon, south along SE edge of Indian Wells Vy. Concentrated around the K2 Track	2,000-3,000 ft	Mojave sand field	Scientific value (extreme age)
Coso Mountains lupine *Lupinus magnificus* var. *glarecola*	CN, CF, G	North Louisiana Butte to Upper Centennial Flat	5,000-8,000 ft	Pinyon woodland, Great Basin mixed scrub, sagebrush scrub, Joshua tree woodland, blackbush scrub	--/--/4.3
Creamy blazing star *Mentzelia tridentata*	B	North SW lower slope of Cinder Pk. NAWS	2,310-3,828 ft	Mojavean desert scrub	--/--/1B.3

Species Common Name *Scientific Name*	Land Use Management Units (LMU)	North or South Range Complex/ specific loci	Elevation (feet above MSL)	Associated Plant Community at NAWS China Lake	Status Federal/State/CNPS Or Reason for NAWS-Sensitive Species
Crowned muilla *Muilla coronata*	NA	North Devil's Kitchen area (Zembal 79), Coso and Argus ranges	3,000-5,700 ft	Joshua tree woodland, blackbush scrub, desert transition scrub, Mojave mixed scrub, hopsage scrub, shadscale scrub, creosote bush scrub	--/--/4.2
Oppressed muhly *Muhlenbergia appressa*	MS	South E of NW seep spring, NE of Pilot Knob	6-500 ft	Coastal scrub, Mojavean desert scrub, Valley and foothill grassland	--/--/2.2
Amargosa beardtongue *Penstemon fruticiformis* ssp. *amargosae*	CS, G	North Near Cactus Flats, Argus Range	2,805-4,620 ft	Mojavean desert scrub	--/--/1B.3
Mono County phacelia *Phacelia monoensis*	CN	North North of Coso Pk Rd, 1.8 mi S of Pk	575-880 ft	Pinyon and juniper woodland, Great Basin scrub, clay, roadsides, alkaline meadows	--/--/1B.1
Death Valley round-leaved phacelia *Phacelia mustelina*	MS, RW	South Granite Wells and Seep Springs	300-6,000 ft	Joshua tree woodland, blackbush scrub, Mojave mixed scrub	--/--/1B.3
Charlotte's phacelia *Phacelia nashiana*	B	North SW slope of Volcano Pk in Coso Mts	2,000-7,200 ft	Joshua tree woodland, Mojave mixed scrub, hopsage scrub, shadscale scrub, creosote bush scrub, cinder hills	--/--/1B.2
Mojave indigo bush *Psorothamnus arborescens* var. *arborescens*	RW, MS, SV	South	Above 2,500 ft	Joshua tree woodland, blackbush scrub, Mojave mixed scrub, hopsage scrub, wash zones and bajada terraces	--/--/4.3
Mojave fish-hook cactus *Sclerocactus polyancistrus*	CF, JR, G, MS, RW, MN	North and South Coso and Argus ranges; Eagle Crags-Pilot Knob-Granite Mt area, Louisiana Butte-Big Petroglyph cyn – El Conejo mine area, Coso Village-Darwin Wash	2,000-7,000 ft	Great Basin mixed scrub, Joshua tree woodland, blackbush scrub, desert transition scrub, Mojave mixed scrub, shadscale scrub, creosote bush scrub	--/--/4.2
DeDecker's clover Trifolium *macilentum* var. *dedeckerae*	CN	North Cyn N of main NE ridge off Coso Pk, SW of Crystal Spr.	6,900-11,500 ft	Pinyon woodland	--/--/1B.3

Species Common Name *Scientific Name*	Land Use Management Units (LMU)	North or South Range Complex/ specific loci	Elevation (feet above MSL)	Associated Plant Community at NAWS China Lake	Status Federal/State/CNPS Or Reason for NAWS-Sensitive Species
Plants Reported in CNDDB or with Unconfirmed Records at NAWS China Lake					
Shining milkvetch *Astragalus lentiginosus* var. *micans*	B, C, S, AA, M, MM, PL, OTE, G, AL	North Eureka Vy, W side of Slate range, Searles Vy	2,000-3,500 ft	Creosote bush scrub, Saltbush scrub, Alkaline basin scrub	--/--/1B.2
Naked milkvetch *Astragalus serenoi* var. *shockleyi*	NA	North	4,000-7,000 ft	Sagebrush scrub, Pinyon and juniper woodland	--/--/2.2
Panamint mariposa lily *Calochortus panamintensis*	CN	North Coso North	6,500-8,100	Pinyon and juniper woodland, Great Basin mixed scrub, sagebrush scrub	--/--/4.2
Winged cryptantha *Cryptantha holoptera*	NA	North or South	30-500 ft	Mojavean desert scrub, Sonoran desert scrub	--/--/4.3
Caespitose evening-primrose *Oeonothera caespitosa* ssp. *crinita*	CF	North	3,800-11,000 ft	Mixed desert scrub, Pinyon and juniper woodland, Bristlecone pine forest, Subalpine coniferous forest	--/--/4.2
Plants with Habitat at NAWS China Lake but Currently Not Known at NAWSCL					
Darwin rock cress *Arabis pulchra* var. *munciensis* (*Boechera lincolnensis*)		North or South	3,500-6,500 ft	Chenipod scrub, Mojavean desert scrub, carbonate	--/--/2.3
Lane Mountain milkvetch *Astragalus jaegerianus*		South	3,000-4,000 ft	Creosote bush scrub, Joshua tree woodland	FPE/--/1B.1
Pygmy poppy *Canbya candida*		North	2,000-4,000 ft	NA	--/--/4.2
Barstow Wooly Sunflower *Eriophyllum mohavense*		North or South	3,000-4,000 ft	NA	--/--/1B.2
Ripley's Gilia *Gilia ripleyi* (*Aliciella* r.)		North or South	3,000-4,000 ft	NA	--/--/2.3

Sources: US Fish and Wildlife Service 2009, 1996b; US Navy 1999, 1998b; California Department of Fish and Game 2011; Hickman 1993; Skinner and Pavlik 1994, CNPS 2011.

Notes: MSL = Mean sea level
NA = Information not available

Land Management Units
AA = Armitage Airfield; AL = Airport Lake Range; B = Baker Range; C = Charlie Range; CAF = Cactus Flats Range; CF = Coles Flat Range; CG = Coso Geothermal; CN = Coso North Range; CS = Coso South Range; DW = Darwin Wash; G = George Range; JR = Junction Ranch; M = Mainsite; MM = Main Magazines; MN = Mojave B North; MS = Mojave B South; OTE = Ordnance T&E Area; PL = Propulsion Laboratories; RW = Randsburg Wash; S = SNORT; SV = Superior Valley

Federal Status
FPE = Proposed endangered
-- = No status definition

State Status
-- = No status definition

CNPS California Native Plant Society Status:
1B: Considered rare, threatened, or endangered in California and elsewhere
2: Plants rare, threatened, or endangered in California, but more common elsewhere
3: Plants for which we need more information – review list
4: Plants of limited distribution a watch list
Decimal notations: .1 - Seriously endangered in California,
.2 - Fairly endangered in California,
.3 - Not very endangered in California

Table D-2
NAWS-Sensitive Wildlife Species Known or Suspected to Exist On NAWS China Lake

Species Common Name Scientific Name	North or South Range	Habitat on NAWS China Lake	Legal Status Federal/State	Reason for NAWS-Sensitive Species Status
Invertebrates				
Argus land snail *Eremariontoides argus*	Both	Revenue Canyon, Homewood Canyon, Slate Range, Mountain Springs Canyon	--/--	Species of limited distribution
Fairy shrimp *Branchinecta* spp.	North	Playas	--/--	Species occur in a protected habitat
Jerusalem crickets *Stenopelmatus* spp.	North	Creosote bush scrub, sandy areas	--/--	May be endemic species of limited distribution
Dune cockroaches *Arenavaga* spp.	North	Sand dunes	--/--	May be endemic species or subspecies
Darwin Tieminn's beetle *Megacheuma brevipennis tiemannii*	North	Associated with Parry saltbush, which occurs near playas	--/--	Has a limited distribution
Dune weevils *Trigonoscuta* spp.	North	Sand dunes	--/--	Species of limited distribution
San Emigido blue *Plebejulina emigdionis*	North	Near the El Conejo Gate	--/--	Species of limited distribution
Spotted blue *Euphilotes baueri vernalis*	North	Louisiana Butte	--/--	Species of limited distribution
Woodland satyr *Cercyonis sthenele*	North	Argus Range, Coso Range, Etcheron Valley	--/--	Species of limited distribution
Amphibians				
Western toad *Bufo boreas*	North	Haiwee Spring	--/--	BLM indicator species
Pacific tree frog *Pseudaeris regilla*	North	Haiwee Spring	--/--	BLM indicator species
Reptiles				
Chuckwalla *Sauromalus obesus*	Both	Argus Range, Coso Range, rocky areas to 6,000 feet above MSL	FSC/--	BLM indicator species

Species Common Name Scientific Name	North or South Range	Habitat on NAWS China Lake	Legal Status Federal/State	Reason for NAWS-Sensitive Species Status
Gilbert's skink *Eumeces gilberti*	North	North Range springs and riparian habitat	--/--	BLM indicator species
Panamint alligator lizard *Gerrhonotus panamintina*	North	Argus Range, Coso Range, Margaret Ann Spring, Haiwee Spring	FSC/CSC	Species of concern
Birds				
Neotropical migrant birds (numerous species)	Both	Riparian areas	Variable	Species may include migrant threatened or endangered species
Raptors (numerous species)	Both	Throughout	Variable	Federally-endangered and California-listed species are migrants
Wetlands Birds (numerous species)	Both	Playas, riparian areas	Variable	Birds use wetlands resources
Mammals				
Spotted bat *Euderma maculatum*	Both	Water sources and roosting places, such as old buildings and mines	FSC/CSC	Species of concern
Townsend's big-eared bat *Corynorhinus townsendii*	Both	Water sources and roosting places, such as old buildings and mines	FSC/CSC	Species of concern
Pallid bat *Antrozous pallidus*	Both	Water sources and roosting places, such as old buildings and mines	--/CSC	Species of concern
Greater western mastiff-bat *Eumops perotis*	Both	Water sources and roosting places, such as old buildings and mines	FSC/CSC	Species of concern
Mohave ground squirrel *Spermophilus mohavensis*	Both	Brown Mountain, Pilot Knob Valley, Superior Valley, Coso geothermal area	--/CT	Legal status
Argus Mountains kangaroo rat *Dipodomys panamintinus argusensis*	North	Upper Cactus Flat, Darwin Wash	--/--	BLM Sensitive Species
Ringtail *Bassariscus astutus*	North	Argus Range, Coso Range	--/--	BLM Sensitive Species
American badger *Taxidea taxus*	Both	All slopes on the North and South Ranges	--/--	BLM Sensitive Species
Mountain lion *Felis concolor*	North	Argus Range, Coso Range	--/--	Low numbers on NAWS China Lake
Nelson's bighorn sheep *Ovis Canadensis nelson*	Both	Transient in the Argus Mountains and Eagle Crags	--/--	Limited distribution in California; have been reintroduced to NAWS China Lake by the Navy, BLM, and the CDFG

Species Common Name Scientific Name	North or South Range	Habitat on NAWS China Lake	Legal Status Federal/State	Reason for NAWS-Sensitive Species Status
Vole (unknown species) *Microtus* sp.	Both	Lark Seep, Paxton Ranch, Margaret Ann Spring, Eagle Crags	FE*/SE*	*The species has not been positively identified, but may be the Amargosa vole (*Microtus californicus sciroensis*)

Sources: California Department of Fish and Game 2011; US Fish and Wildlife Service 2009, 1996b; US Navy 1999, 1998b.

Notes: NA = Information not available

Federal Status	State Status
FE = Endangered	SE = Endangered
FSC = Species of Concern (formerly C2)	CSC = California species of special concern
-- = No status definition	-- = No status definition

D.3 DETAILED DESCRIPTIONS OF NAWS—SENSITIVE SPECIES

D.3.1 NAWS—Sensitive Plant Species

Although there are no known federally listed threatened or endangered plant species on NAWS China Lake lands, there are a few unique plant species that are of particular interest and management concern. The plant species discussed in this section do not have federal protection, but have been identified as sensitive plant species existing on NAWS China Lake. According to the Integrated Natural Resources Management Plan currently in preparation by NAWS China Lake (US Navy 1998), sensitive plant species include those that are listed or are being considered for listing by the State of California, as well as those considered sensitive by the USFWS, BLM, or CNPS. Those plants with a limited range or endemic to a particular area; those of questionable or unclear taxonomic status; species of scientific interest; those exhibiting unique or rare features (e.g., creosote clones or Joshua spikes); those occurring in a known valuable habitat (e.g., riparian areas, or sand dunes); and those species which exist in a protected habitat (e.g., wetlands, riparian areas, playas) are also considered NAWS-sensitive.

Great Basin Onion. Great Basin onion (*Allium atrorubens* var. *Atrorubens*) is a perennial herb from a bulb. This species is included on the California Native Plant Society's (CNPS) List 2.3, plants that CNPS considers to be rare, threatened or endangered in California, but more common elsewhere. It grows in rocky or sandy cryptogam-binded soils from 3,960 feet (1200m) - 7,640 feet (2315 m) above MSL. Great Basin onion is reported on NAWS North Range by Dave Silverman (2008) in Blackbrush-Yucca scrub at 36.175N -117.646W, 6.0 km SE of Coso Peak, 185km WSW of Darwin Spring. (CNPS 2011).

Pinyon Rock Cress. Pinyon rock cress (*Arabis dispa; Boechera d.*) is an upright, perennial herb of the mustard family. This species is included on the California Native Plant Society's (CNPS) List 2.3, plants that CNPS considers to be rare, threatened or endangered in California, but more common elsewhere. It usually grows on loose, gravelly slopes or on compact talus slopes, from 4,000 feet (1,219 m) to 8,000 feet (2,438 m) above MSL. Pinyon rock cress is reported by

DeDecker (1980) as infrequent in the Coso and Argus ranges from 5,000 feet (1,524 m) to 7,600 feet (2,316 m) above MSL. Current records at NAWS include sparse populations (less than 10 plants) on Birchum Mesa, south Etcheron Valley and El Conejo gate (US Navy 1997d).

Darwin Mesa Milkvetch. Darwin Mesa milkvetch (*Astragalus atratus* var. *mensanus*) is a delicate herbaceous perennial. The variety mensanus, occurring in the northern Mojave Desert, is geographically isolated from the rest of the species mostly in the Great Basin Desert. The Darwin Mesa milkvetch is included on CNPS List 1B.1, plants that CNPS considers to be rare, threatened or endangered in California and elsewhere. It occurs on open flats and hillsides, between 5,800 feet (1,768 m) and 7,800 feet (2,377 m) above MSL, in volcanic clay and gravel. It usually occurs among low scrub formations associated with blackbush, Joshua tree woodland, sagebrush and pinyon woodland. The NAWS China Lake populations occur in the Coso peak, El Conejo and south Etcheron Valley areas. Only one other population (Hunter Mountain) outside NAWS is currently known (US Navy 1997d).

Panamint Bird's-beak. Panamint bird's-beak (*Cordylanthus eremicus* ssp. *eremicus*) is a late blooming annual species. This species is included on CNPS List 4.3, plants CNPS considers to be of limited distribution (a watch list). Panamint bird's beak grows from 4,900 feet (1,494 m) to 8,400 feet (2,560 m) above MSL, in sagebrush scrub and pinyon woodland. It is endemic to the Coso, Argus, Nelson, San Bernardino and Panamint ranges. This species is widespread and locally abundant in high elevations of NAWS China Lake North Range, ranging from 5,000 feet above MSL in the Moscow Spring area, and extending to the western flanks of Maturango Peak and throughout the Coso Range, up to 8,000 feet above MSL. A 1993 survey found the species extremely abundant in many areas and widespread in both the Argus and Coso Ranges (US Navy 1997d).

Pinyon Mesa Buckwheat. Pinyon Mesa buckwheat (*Eriogonum mensicola*) is a late blooming subshrub. This species is included on the California Native Plant Society's (CNPS) List 1B.3 Rare, threatened, or endangered in California and elsewhere, not very endangered with 14 known occurrences in California. It occurs in rocky or gravelly soils, at 7,244 feet (2,195 m) above MSL in Pinyon-Juniper woodland, GreatBasin scrub and Upper montane coniferous forest. Pinyon Mesa buckwheat is reported on NAWS North Range by G.F. Pratt (August 17, 1997 at 36.2N - 117,716W. (CNPS 2011).

Panamint Mountains Buckwheat. Panamint Mountains buckwheat (*Eriogonum microthecum var panamintense*) is a late blooming subshrub or shrub. This species is included on the California Native Plant Society's (CNPS) List 1B.3 Rare, threatened, or endangered in California and elsewhere, not very endangered with 11 known occurrences in California. It grows among rocky terrain, between 5940 feet (1800m)- 7240 feet (2805 m) on steep, rocky mountain slopes of decomposed granite soils in Pinyon woodland with low sagebrush. Panamint Mountains buckwheat is reported by A.C. Sanders (Oct. 11, 1997) on NAWS North Range in the Argus Range, east and south sides of Parkinson Peak, ca. 1.5 mi. SE of Maturango Peak.(CNPS 2011).

Yerba Desierto. Yerba desierto (*Fendlerella utahensis*) is a low, much-branched erect shrub with shreddy bark with small, white flowers. It occurs on dry limestone slopes between 5,000 feet (1,524 m) and 8,400 feet (2,560 m) above MSL, in shadecale scrub, mixed desert scrub,

sagebrush scrub, and pinyon woodland. It occurs throughout the southwest and in the mountains of the northern and eastern Mojave desert. This species is included on CNPS List 4.3. On NAWS China Lake it has been observed in the Maturango Peak area (DeDecker 1980). Potential distribution on NAWS China Lake would be in limestone areas of the northern Argus Range, although not much of the potential habitat has been surveyed (US Navy 1997d).

Creosote Clones. NAWS China Lake has one of the largest concentrations of creosote rings in the Mojave Desert. The largest number of creosote rings are found in the heavy sand deposits and sand dunes along the southern portion of the Argus Range near the K-2 Range. The creosote rings often grow to diameters in excess of 40 feet (12.2 m). It has been estimated that these creosote rings are 6,000 to 8,000 years in age. For example, one clone, King Clone, is approximately 72 feet (21.9 m) in diameter and has been estimated to be approximately 11,700 years old (Michael Brandman Associates, Inc. 1989).

Coso Mountains Lupine. Coso Mountains lupine (*Lupinus magnificus* var. *glarecola*) is a low growing herbaceous perennial with a tall and colorful spike of purplish blue flowers. It grows between 5,000 feet (1,524 m) and 8,000 feet (2,438 m) above MSL in Joshua tree woodland, sagebrush scrub, blackbush scrub, and pinyon woodland. It is infrequent on the slopes of the eastern Sierra Nevada. This species is included on CNPS List 4.3. It has been found on NAWS China Lake throughout higher elevations in the Coso range, including Upper Centennial Flat, Coso Peak, Silver Peak, El Conejo Gate and Louisiana Butte. The species has been successful at colonizing road cuts at NAWS China Lake, especially on Louisiana Butte (US Navy 1997d).

Creamy Blazing Star. Creamy blazing star (*Mentzelia tridentata*) is a spreading to erect annual herb with medium sized cream-white petals. It occurs in rocky, gravelly and sandy soils in Mojavean desert scrub between 2310 feet (700 m) to 3828 feet (1160 m). This species is included on the California Native Plant Society's (CNPS) List 1B.3 Rare, threatened, or endangered in California and elsewhere, not very endangered with 18 known occurrences in California. It is threatened by vehicles, mining and grazing. Creamy blazing star is reported by Dave Silverman (May 20, 1998) on the SW lower slope of Cinder Peak, ca. 9 km E of Little Lake; China Lake Naval Air Weapons Station, SW Coso Mountains. (CNPS 2011)

Crowned Muilla. Crowned muilla (*Muilla coronata*) is a small bulb forming member of lily family which resembles some onion (*Allium* spp.) species. Crowned muilla prefers rocky to clayey soils in Joshua tree woodland, mixed Mojave scrub, creosote bush scrub and Mojave-Great Basin transition communities. This species is included on CNPS List 4.2. At NAWS China Lake, this species is documented in the Devil's Kitchen site in the Coso Geothermal area. DeDecker (1980) reports this as occasional populations in the Coso and Argus ranges, from 3,000 feet (914 m) to 5,700 feet (1,737 m) above MSL. This species should be expected on the South Range (US Navy 1997d).

Amargosa Beardtongue. Amargosa beardtongue (*Penstemon gruticifolrmis* var. *amargosae*) is much-branched perennial herb or non-woody shrub. It has purple flowers with a whitish throat and blooms in Spring. It occurs in Mojavean desert scrub between 2800 feet (850 m) to 4620 feet (1400 m). in rocky, gravelly and sandy soils in Mojavean desert scrub between 2310 feet (700 m) to 3828 feet (1160 m). This species is included on the California Native Plant Society's (CNPS)

List 1B.3 Rare, threatened, or endangered in California and elsewhere, not very endangered with 18 known occurrences in California. It is also Threatened in Nevada. Amargosa beardtongue is reported by G.F. Prat (June 18, 1995) in the Argus Range on China Lake Naval Air Weapons Station North Range. near Birchum Spring. This plant is reported as a host to the Silvery Blue butterfly (*Glaucophysyche lygdamus*) (CNPS 2011).

Death Valley Round-leaved Phacelia. Death Valley round-leaved phacelia (*Phacelia mustelina*) is a small, branching annual with small, violet flowers, and a strong, disagreeable odor. It is found in crevices and ledges on granitic, volcanic, and limestone rock outcrops and cliffs, between 300 feet (91 m) and 6,000 feet (1,829 m) above MSL, in creosote bush scrub, mixed desert scrub, sagebrush scrub, and pinyon woodland. This species is included on CNPS List 1B.3. On NAWS China Lake, it is known at two locations, near Granite Wells and Seep Spring in Mojave B South Range. Potentially it could occur in appropriate habitat in the Argus Range, and the Mojave B and Randsburg Wash areas (US Navy 1997d).

Charlotte's Phacelia. Charlotte's Phacelia (*Phacelia nashiana*) is a federal species of concern and is included on CNPS List 1B.2. Charlotte's phacelia is an annual flowering plant with cobalt blue flowers. It appears to be limited to volcanic soils along the western boundary of the North Range (US Navy 1989, 1997).

Mojave Indigo Bush. Mojave indigo bush (*Psorothamnus arborescens* var. *arborescens*) is a low to medium sized legume shrub. This taxon occurs in washes and upper bajada slopes of the central Mojave region, from east of Barstow, west to Randsburg and north into NAWS China Lake. The dense populations are most commonly associated with wide washes of decomposed granite. This taxon is included on CNPS List 4.3. The populations at NAWS China Lake occur above 2,500 feet (762 m) above MSL and are restricted to well-drained upper washes and alluvial terraces in Mojave mixed scrub, Joshua tree woodland and blackbush scrub. The distribution for Mojave indigo bush at NAWS China Lake includes all appropriate habitat south of Randsburg Wash (US Navy 1997d).

Mojave Fish-hook Cactus. Mojave fish-hook cactus (*Sclerocactus polyancistrus*) is included on CNPS List 4.2. At NAWS China Lake, Mojave fish-hook cactus occurs on the low granitic hills adjacent to Etcheron Valley, southeast of Coso Peak, Louisiana Butte, at Pink Hill, and near Renegade Canyon. This species has not been found on the Mojave B North Range or the Randsburg Wash Test Range, most likely because of the granitic and volcanic geology in the Mojave B North Range and the low elevation in the Randsburg Wash Test Range. However, one large, almost continuous, population exists in the western portion of the Mojave B South Range (US Navy 1982, 1997d).

DeDecker's Clover. DeDecker's clover (*Trifolium macilentum* var. *dedeckerae*) is a low, herbaceous perennial with a loose crown of tripinnate leaves and distinctively arid-adapted features. This plant is known in the eastern Sierra Nevada. The sites represent a range of plant communities from pinyon woodland to Alpine crests, 6,900 feet (2,103 m) to 11,500 feet (3,505 m) above MSL, usually growing in rock crevices. This species is included on CNPS List 1B.3. A likely perennial *Trifolium* species was recently located northeast of Coso Peak. The population consists of approximately 100 plants on an upper slope of metamorphic granite at

7,500 feet (2,286 m) above MSL. Further determinations and collections need to be completed (US Navy 1997d).

Darwin Rock Cress. Darwin rock cress (*Arabis pulchra* var. *munciensis*) is a slim, upright, perennial herb of the mustard family. It usually grows in crevices of rocky areas and in n the protection of shrubs. It is known mostly to the northeast of NAWS China Lake and into Nevada. One verified record comes from the Darwin Hills, a few miles north of NAWS China Lake. This species is included on CNPS List 2.3. Potential habitat is located on NAWS China Lake in the north Coso and Argus ranges (US Navy 1997d).

Shining Milkvetch. Shining milkvetch (*Astragalus lentiginosus* var. *micans*) is included on CNPS List 1B.2. This species occurs from 2,000 feet (607 m) to 3,500 feet (1,067 m) above MSL on sandy areas, stabilized dunes, and roadsides. It occurs in Mojave sand field, creosote bush scrub, saltbush scrub, and alkaline basin scrub (US Navy 1997d).

Naked Milkvetch. Naked milkvetch (*Astragalus serenoi* var. *shockleyi*) is a spreading to upright perennial herb. It is moderately rare and scattered, but widely distributed from 4,000 (1,219 m) MSL to 7,000 feet (2,134 m) above MSL, through much of the White-Inyo Mountains and into Nevada. It generally prefers sagebrush or pinyon pine plant communities. This species is included on CNPS List 2.2. An unconfirmed specimen was collected in the Cole Springs area on NAWS China Lake in 1996 (US Navy 1997d).

Panamint Mariposa Lily. The Panamint mariposa lily (*Calachortus panamintensis*) occurs at elevations between 6,500 (1,981 m) MSL and 8,100 feet (2,469 m) above MSL. It predominantly occurs in areas containing pinyon woodland, Great Basin mixed scrub, and sagebrush scrub on basalt flats and rolling terrain. Two sites with plants that have tentatively been identified as Panamint mariposa lily are known to exist in NAWS in the Coso Park area (US Navy 1997d). This plant is included on CNPS List 4.2.

Booth's Evening Primrose. Booth's evening primrose (*Camissonia boothii* ssp. *boothii*) is a late spring annual. It is a common plant in western Nevada between 2,500 feet (762 m) and 4,500 feet (1,372 m) above MSL. This species is included on CNPS List 2.3. This species is suspected to exist on NAWS China Lake at Cinder Peak, Volcano Peak, Sugarloaf, Coso Geothermal Area, Haiwee Spring and Cactus Flat (US Navy 1997d).

Clokey's cryptantha. Clokey's cryptantha (*Cyrptantha clokeyi*) is a branching annual with hairy stems and leaves and small white flowers. It grows in sandy or gravelly soils in creosote bush scrub or Mojave mixed scrub at 3,000 feet (914 m) to 4,500 feet (1,372 m) above MSL. This species is included on CNPS List 1B.2. It was observed, but not confirmed, on the South Range at NAWS China Lake (Silverman 1998).

Panamint Live -forever. Panamint live-forever (*Dudleya saxosa* ssp. *saxosa*) is a small succulent perennial of the Stonecrop family (Crassulaceae). It occurs only in the Panamint Mountains from Augerberry Point in the north to Arrastre Springs in the south. It occurs between 3,000 feet (914 m) and 7,100 feet (2,164 m) above MSL, in creosote bush scrub and pinyon woodland. It is usually restricted, but locally common, growing on dry stony slopes, bouldery areas and crevices

in granitic or carbonate soils. This species is a federal species of concern, and is included on CNPS List1B.3. An unconfirmed BLM report from 1980 indicates this taxon at NAWS China Lake, on Pilot Knob on the Mojave B South Range (US Navy 1997d).

Inyo Hulsea. Inyo hulsea (*Hulsea vestita* ssp. *inyoensis*) occurs on steep slopes of unstable substrate, composed of dark slate, shale, or volcanic soils, between 4,600 feet (1,402 m) and 7,600 feet (2,316 m) above MSL, in mixed desert scrub, sagebrush scrub, and pinyon woodland. Inyo hulsea is a low, herbaceous biennial or perennial with yellow ray and disk flowers. It occurs in the Grapevine, Cottonwood, Inyo, and Coso mountains in California. This species is included on CNPS List 2.2. On NAWS China Lake, only one collection appears to have been made in the canyon next to and south of Crystal Spring in the Coso Mountains. Potential habitat on NAWS China Lake is in disturbed areas and unstable slopes of coarse soil in the Coso and Argus ranges above about 5,000 feet (1,524 m) above MSL (US Navy 1997d).

Caespitose Evening Primrose. Caespitose evening primrose (*Oenothera caespitosa* ssp. *crinata*) is an herbaceous perennial with large, white flowers. It occurs on limestone and calcium soils in dry rock crevices and outcrops, between 3,800 feet (1,158 m) and 11,000 feet (3,353 m) above MSL in mixed desert scrub, pinyon woodland, bristlecone pine forest, and subalpine coniferous forest. The subspecies occurs in several mountain ranges in the northern and eastern Mojave Desert. This species is included on CNPS List 4.2. This evening primrose subspecies is known on NAWS from one population identified in the 1993 summer sensitive plant survey, however the plant material was not complete and there is some question on the determination. The nearest known populations to NAWS China Lake are collections made near Darwin. Potential habitat on NAWS China Lake could be on gypsum and limestone areas above 5,000 feet (1,524 m) above MSL (US Navy 1997d).

Lane Mountain Milkvetch. Lane Mountain milkvetch (*Astragalus jaegerianus*) is a slender, diffuse herbaceous perennial, the stems weak and often twining through a shrub. It occurs on low granite hills and desert mesas, in granite soils and gravel, between 3,000 feet (914 m) and 4,000 feet (1,219 m) above MSL, in creosote bush scrub and Joshua tree woodland. Its entire distribution is within an approximately 15 mile (24.1 km) diameter circle. This species is a federal listed as endangered species and it is included on CNPS List 1B.1 (CNPS 2011). The nearest known population to NAWS China Lake is approximately four miles (6.4 km) south, in Superior Valley. Potential habitat on NAWS China Lake is in Superior Valley and the gentle slopes bordering the valley (US Navy 1997d).

Pygmy Poppy. Pygmy poppy (*Canbya candida*) is an annual with white flowers above a minute clump of foliage. It has been found close to the NAWS China Lake North Range western boundary. The general range of pygmy poppy is in the southern Sierra-Mojave transition from south of Owens Valley, through Red Rock Canyon, Rand Mountains, Kramer Hills, Lucerne Valley, Mojave and Lancaster. This distribution suggests that the pygmy poppy is more common than what is currently documented. However, many of these populations are on private lands or have other threats. This species is included on CNPS List 4.2. This species likely occurs on the North Range and perhaps in the Pilot Knob area of the South Range (US Navy 1997d).

D.3.2 NAWS—Sensitive Wildlife Species

NAWS—sensitive species according to the Natural Resources Management Plan currently in preparation by NAWS China Lake (US Navy 1997), include: those that are listed or are being considered for listing as endangered or threatened; those which are considered a species of special management concern by the US Fish and Wildlife Service, BLM, US Forest Service, National Audubon Society, or the California Department of Fish and Game; those with limited range or endemic to a particular area; those of questionable or unclear taxonomic status; species of scientific interest (e.g., butterflies); those exhibiting unique or rare features; those found in a known valuable habitat (e.g., riparian areas or sand dunes); and those species found in a protected habitat (e.g., wetlands, riparian areas, playas). This section is organized according to evolutionary grouping, including invertebrates, fishes, amphibians, reptiles, birds (avian species), and mammals.

Invertebrates

Fairy Shrimp. Ephemeral playa and clay pan habitats support many invertebrates, including several species of fairy shrimp such as giant fairy shrimp (*Branchinecta gigas*). Figure 3.4-5 shows the location of giant fairy shrimp on NAWS China Lake. Other species of fairy shrimp, *B. mackini* and *B. lindahli*, are also located on NAWS China Lake. These species were collected from Mirror Lake, China Lake, the west end of Airport Lake, and several unnamed playas near the G-1 Tower Road during a study of invertebrates in temporary pools and playa lakes (California Department of Fish and Game 1983).

Jerusalem Crickets. A Jerusalem cricket species (*Stenopelmatus* sp.) has been located on NAWS China Lake, however, studies to determine the specific species of Jerusalem cricket have not been conducted. As such, the NAWS China Lake Natural Resources Management Plan recommends that it should be regarded as an endemic species with a limited distribution and therefore potentially sensitive. It may ultimately be afforded legal protection. The family taxonomy is currently being reviewed and what are currently considered to be only a few species may actually be many species. On NAWS China Lake, Jerusalem crickets may be found throughout creosote bush scrub but are probably most common in sandy areas such as the K-2 track area. Weissman has conducted work in the K-2 area and other sandy areas around China Lake on the North Range. The species may also be present in riparian areas (US Navy 1997d).

Dune Cockroaches. Two species of dune cockroaches (*Arenavaga* spp.) have been found in the vicinity of Birchum Springs. The taxonomy of these species is currently unresolved. Because they are wingless, they cannot move great distances and are likely an endemic species or subspecies which may ultimately receive legal protection (US Navy 1997d).

Darwin Tiemann's Beetle. Darwin Tiemann's beetle (*Megacheuma brevipennis tiemannii*) is a wide ranging species known from scattered localities in the Great Basin regions of Idaho, eastern Oregon, north-central Nevada, Utah, and recently discovered populations in the Fish Lake and China Lake basins in California. On NAWS China Lake, it is associated with its host plant, Parry saltbush; thus, its distribution is associated with areas surrounding the China Lake playa, and potentially Airport Lake playa, Paxton Ranch, Baker Range playas, and Magazine playa. As

such, it may qualify for state and/or federal listing as a threatened or possible endangered species due to its limited distribution (US Navy 1997d). There has been some indication that the subspecies on NAWS China Lake deserves specific status. A paper has been completed raising *M. b. tiemannii* to species level. As such, it should be regarded as an endemic species with a limited distribution and a potentially listed species (US Navy 1997d).

Argus Land Snail. The Argus land snail (*Eremariontoides argus*) is a small land snail that lives in rocky areas on north-facing slopes. The Argus land snail has no specific legal status, and is not considered to be a Special Animal by the California Department of Fish and Game's California Natural Diversity Data Base. However, it is a species of limited distribution which has been collected on NAWS China Lake in Revenue Canyon, Homewood Canyon, on the eastern slopes of the Slate Mountains, and Mountain Springs Canyon (US Navy 1997d).

Dune Weevils. Dune weevils (*Trigonoscuta* spp.) have been located on many of the sand dunes on NAWS China Lake. However, studies to determine the specific species of dune weevil present on NAWS China Lake have not been conducted. There may be more than one species present on NAWS China Lake (US Navy 1997d).

San Emigido Blue. San Emigido blue (*Plebejulina emigdionis*) is a butterfly species which is restricted to about a dozen locations in Kern, Inyo, San Bernardino, and Ventura counties. On NAWS China Lake it has been found near the El Conejo Gate (US Navy 1997d).

Spotted Blue. Spotted blue (*Euphilotes baueri vernalis*) is a butterfly species which is known to exist only on NAWS China Lake and in Coxey Meadow in the San Bernardino Mountains. It may also exist south of Butterbreadt Peak on the southeast slopes of the Sierra Nevada, but studies to confirm this have not been conducted. On NAWS China Lake, this species has been found on the east side of Louisiana Butte north into the Coso Range near Pinon Bridge (US Navy 1997d).

Woodland Satyr. Woodland satyr (*Cercyonis sthenele*) is a butterfly species which has been located in Shepherd Canyon, the high elevations of the Argus and Coso ranges, and the western side of Etcheron Valley. At one time this species was probably more widespread, but its numbers have been reduced because it may compete with introduced horses and burros since its host species are perennial grasses (US Navy 1997d).

Fishes

There are currently no fish designated as NAWS-sensitive on NAWS China Lake, with the exception of the federally endangered Mohave tui chub.

Amphibians

There are two NAWS-sensitive species on NAWS China Lake, the western toad (*Bufo boreas*) and the Pacific tree frog (*Pseudaerus regilla*). These are both species that are used as indicator species for habitat quality determination by the BLM. The western toad occurs throughout the NAWS China Lake urban areas (US Navy 1997d). Outside of these developed areas, the western

toad has been confirmed only at Haiwee Spring. The Pacific tree frog was recorded at Haiwee Spring in 1980.

Reptiles

Chuckwalla. Although it is not a federally-threatened or endangered reptile species, the chuckwalla (*Sauromalus obesus*) is a federal species of concern and a species of particular interest and management concern. The chuckwalla is a long-lived (possibly more than 20 years) herbivore, and, as such, has delayed reproduction and relatively large clutches that increase with age (and size). They do not reproduce annually. They live among boulder piles and use crevices for shelter, taking refuge there when disturbed, wedging themselves in the cracks by inflating the body. Except for a study in a limited area of NAWS China Lake, there have been no surveys or other studies for chuckwallas. Their distribution on NAWS China Lake is currently unknown. Potentially, chuckwallas could occur in all rocky areas of the Argus and Coso ranges, between the elevational range of sea level to 6,000 feet (1,829 m) above MSL (US Navy 1997d).

Gilbert's Skink. Gilbert's skink (*Eumeces gilberti*) is used as an indicator species of habitat quality by the BLM. It is widespread among the springs and riparian habitat on the North Ranges of NAWS China Lake (US Navy 1997d).

Panamint Alligator Lizard. The Panamint alligator lizard (*Elgaria [Gerrhonotus] panamintina*) is a federal species of concern and a California species of special concern because it is not well known and is assumed to have a limited distribution. On NAWS China Lake, potential Panamint alligator lizard habitat is restricted to the Argus and Coso ranges, within the vicinity of permanent springs or riparian habitat. Panamint alligator lizards have been observed on NAWS China Lake at Margaret Ann Spring and at Haiwee Spring. Several areas of potential habitat include Mountain Springs Canyon, Coso Cold Spring, and a lateral spring connecting Mountain Springs Canyon to Wilson Canyon (US Navy 1997d).

Avian Species

For discussion purposes of avian species requiring special consideration, they have been grouped into three categories: neotropical migrant birds, raptors, and wetland birds. NAWS-sensitive avian species include those that use protected habitats, such as wetlands, or federally-threatened or endangered species that are migrants at NAWS China Lake.

Neotropical Migrant Birds. Neotropical migrant birds, are those that migrate from their summer northern breeding grounds to the warmer southern latitudes for the winter, specifically in Latin America or the Caribbean. Traditional flyways are used during migration, and in desert areas, where energy resources can be widely dispersed, certain areas are critical to the bird's survival. Usually these resources are concentrated around water sources, where invertebrates and vegetation used for food and protected roost sites are more abundant. These resources are present at NAWS China Lake wetlands and riparian areas (US Navy 1989, 1997d).

Raptors. There are 16 raptor species that have been confirmed at NAWS China Lake. There are no breeding sites of federally-threatened or endangered raptor species or identified critical raptor

habitat on NAWS China Lake (US Navy 1989, 1997d). Two former federally-endangered raptor species are migrants at NAWS China Lake; however, these species have been recently delisted. The peregrine falcon (*Falco peregrinus*) is a migrant rarely seen at NAWS China Lake, and the bald eagle (*Haliaetus leucocephalus*) is a rare migrant to the area. There appear to be no threats to these species at NAWS China Lake. Other raptors have State of California listings (USFWS 2009; CDFG 2011; US Navy 1989, 1997d).

Wetland Birds. While birds are migrating over desert areas, wetlands represent a crucial resource for them, as a resting and/or foraging area. Playas also provide foraging for shorebirds because water triggers the hatch of invertebrate eggs. Some birds require wetlands for nesting or as foraging resources within range of nesting areas. None of the wetland birds known to inhabit NAWS China Lake is federally listed as threatened or endangered. Even though there are no federally-endangered wetland bird species that are residents at NAWS China Lake, there are other regulations to protect the wetlands (US Navy 1989, 1997d).

Mammals

Mohave Ground Squirrel. Due to the small geographic range of the Mohave ground squirrel (*Spermophilus mohavensis*) and loss of its habitat, it was designated rare by the State of California in 1971. This was changed to a designation of threatened in 1985 when the State of California amended their Endangered Species Act to match the federal nomenclature. The Mohave ground squirrel prefers alluvial-filled valleys with deep, fine to medium textured soils with Joshua tree woodland, creosote scrub, shadscale scrub, or alkali sink scrub. Desert pavement and eroded, shallow soils that promote rapid runoff seem to limit populations, and they generally avoid rocky or mountainous terrain and sterile playas. On NAWS China Lake, the majority of Mohave ground squirrel habitat is on alluvial fans adjacent to hills and mountains, where the sandy soils tend to be deep. It occurs on Brown Mountain at the south end of the Slate Range, Pilot Knob Valley and Superior Valley on the South Range, and on the North Range, it occurs in the Coso geothermal area, and south and east throughout the Indian Wells and Salt Wells valleys (US Navy 1997d) (Figure 3.4-12).

Vole (unknown species). Although the voles captured on NAWS China Lake have not been positively identified, they may be California voles (*Microtus californicus*). One subspecies of the California vole is federally listed as endangered (Amargosa vole [*Microtus californicus sciroensis*]). The genetic relationship of the vole found at NAWS China Lake to other populations is unknown, and the species should be treated as a potential candidate for federal listing until its taxonomic status is determined. The Amargosa vole typically occurs in wetland pockets of bulrushes (*Scirpus* spp.), cattails (*Typha* spp.), saltgrass (*Distichlis spicata*), and willow (*Salix* spp.). On NAWS China Lake, voles were captured at Lark Seep, Paxton Ranch, and Margaret Ann Spring (Kiva Biological Consulting 1993) (Figure 3.4-13).

Nelson's Bighorn Sheep. Nelson's bighorn sheep (*Ovis canadensis nelsoni*), found in the desert mountain ranges, is one of three races of bighorn sheep inhabiting California. These sheep have a limited distribution in California. They were previously found on NAWS China Lake in the Coso and Argus ranges. Numerous bighorn petroglyphs indicate they were once common throughout the area. Surveys in 1970 concluded that bighorn populations were transient in the Coso

Mountains, and the surveys estimated populations of 12 sheep in the Argus Mountains and seven in the Eagle Crags. Surveys in 1982 reported that the sheep had disappeared from the Coso Range sometime after 1948 and from the Argus Range and Eagle Crags sometime after 1971 (US Navy 1989, 1997d). In an effort toward restoring natural resources at NAWS China Lake, the Navy and the CDFG decided in the early 1980s to re-introduce the bighorn sheep to NAWS China Lake. The Eagle Crags on the South Range of NAWS China Lake was targeted for re-introduction. After eliminating cattle grazing and removing the majority of feral burros from the Mojave B Ranges, 25 bighorn sheep were released in the Eagle Crags in December 1983 and were augmented with another 15 sheep in 1987. In 1986, 25 sheep were released on the east side of the Argus Mountains on the North Range by the BLM and CDFG, on BLM land. As of 1991, the status of the re-introductions was uncertain, although there was evidence of bighorn in both areas and evidence of reproduction in the Eagle Crags (US Navy 1989, 1997d).

Argus Mountains Kangaroo Rat. The Argus Mountains kangaroo rat (*Dipodomys panamintinus argusensis*) is a BLM sensitive species that has a limited distribution. On NAWS China Lake, it is found from upper Cactus Flat south to the northern end of the Indian Wells Valley, east across Cole Flat and Wild Horse Mesa to Darwin Wash (US Navy 1997d).

Bats. NAWS China Lake supports a diverse bat fauna, in part due to its abundance of water sources and mines. Ten species of bats are known to exist on NAWS China Lake. Four of which are considered to be sensitive, including the spotted bat (*Euderma maculatum*), Townsend's big-eared bat (*Corynorhinus townsendii*), pallid bat (*Antrozous pallidus*), and the greater western mastiff-bat (*Eumops perotis*). The pallid bat is a California species of special concern, the remaining three species are federal species of concern and California species of special concern. Protection of roosting and foraging sites, water sources, and food supply are key for management of bat species (US Navy 1997d).

Ringtail. The ringtail (*Bassariscus astutus*) is a BLM sensitive species. Ringtails generally inhabit brushy, rocky slopes between 3,500 feet (1,067 m) and 7,000 feet (2,134 m) above MSL. Distribution and density on NAWS China Lake is unknown, but is suspected to be throughout the Argus and Coso ranges. There does not appear to be appropriate habitat on the South Range. Ringtails have been observed in the Coso Geothermal Area and in Mountain Springs Canyon (US Navy 1997d).

American Badger. The American badger (*Taxidea taxus*) is a BLM significant species. American badgers inhabit a variety of habitat, from sea level to over 8,000 feet (2,438 m) above MSL, from deserts to dense forests. On NAWS China Lake, they occur on all but the steepest slopes of the North Range and South Range (US Navy 1997d).

Mountain Lion. The mountain lion (*Felis concolor*) is a NAWS-sensitive species because of its low numbers on NAWS China Lake. This species occurs in a wide variety of habitats in virtually all mountainous areas of California. On NAWS China Lake, it is uncommon in the Argus and Coso ranges (US Navy 1997d).

APPENDIX E

HAZARDOUS MATERIALS TABLES

Table E-1. Hazardous Waste Accumulation Areas

Building Number	Accumulation Area Description	Facility Type	Wastes Stored
0	EODTEU Compound	90-Day	Wood Crates
0	JCIF	Satellite	Generator Maintenance Wastes
4	Crew Systems Lab	Satellite	Aerosols Used Rags Oils
5	Michelson Lab 1000F	Satellite	Universal Waste
5	Michelson Lab Machine Shop, NW Corner of Shop, Near MLC West Gate	90-Day	Cutting Fluid Oils Solvents
5	Michelson Lab Machine Shop Wing 7 Heat Treat Area	Satellite	Blast Media Acetone
5	Michelson Lab Machine Shop Inside, Cutting Fluid Separator	Satellite	Cutting Fluid
5	Michelson Lab Machin Shop, Outise to East, Between Machine Shop and Wing 7	Satellite	Cutting Fluid Oils Solvents
5	Michelson Lab Machine Shop Inside, 2 Moveable Drums	Satellite	Floor Sweep
5	Life Cycle Environmental Engineering Branch	Satellite	Unknown
5	Michelson Lab Wing 1 Photolab	90-Day	Photoprocessing Wastes Recovered Silver
5	Michelson Lab, Wing 1, Photo Lab, Room 1115A Inside Room 1123	Satellite	Used Bleach with Cyanide
5	Michelson Lab Wing 7, Composites Lab Room 150B	Satellite	Resins Spent Rags Composite Scrap
5	Michelson Lab, Room 150J Between Wings 6 and 7	Satellite	Hexavalent Chromium-Contaminated Rags
5	Michelson Lab Room 104C	Satellite	Unknown
5	Composites Lab Room 150E	Satellite	Part A and B Resins
5	Michelson Lab, Wing 4, Room 1212	Satellite	Oily Rags
5	Solid Sate Lab Room S1	Satellite	Lab Waste in Fume Hood
5	Solid State Lab Room S2	Universal Waste	Fluorescent Tubes Aerosols Batteries
5	Michelson Lab, Wing 6, Room 1634	Satellite	Lab Chemicals
5	Michelson Lab, Wing 6, Room 1622	Satellite	Lab Chemicals
5	Michelson Lab, Wing 6, Room 1613	Satellite	Lab Chemicals
5	Michelson Lab, Wing 6, Room 1617	Satellite	Lab Chemicals
5	Michelson Lab, Wing 6, Room 1620	Satellite	Lab Chemicals
5	Michelson Lab, Wing 6, Room 1641	Satellite	Lab Chemicals
5	Michelson Lab, Wing 6, Room 1637	Satellite	Lab Chemicals
5	Michelson Lab, Wing 6, Room 1637	Satellite	Lab Chemicals
5	Michelson Lab, Wing 6, Room 1625	Satellite	Lab Chemicals
5	Michelson Lab, Wing 6, Room 1621	Satellite	Lab Chemicals
5	Michelson Lab, Wing 6, Room 1609	Satellite	Lab Chemicals
5	Michelson Lab, Wing 6, Room 1631	Satellite	Lab Chemicals
5	Michelson Lab, Wing 3, Room 1328	Satellite	Aerosol Cans Batteries

Building Number	Accumulation Area Description	Facility Type	Wastes Stored
			Fingernail Polish
465	Infrastructure Business Office	Satellite	Office Supplies
879	Police Department (CLPD)	Satellite	Rags Aerosols
921	NAF GSE Outside Building	Satellite	Blast Media
921	NAF GSE Paint Booth Inside Building	Satellite	Aerosols Paint Cans Stripper Paint Waste
950	EODTEU Compound Water Road	Satellite	Vehicle Waste Antifreeze Batteries Aerosols Waste Oil
984	Public Works Light Duty Repair Shop	Satellite	Vehicle Maintenance Wastes
1044	Stran Steel 2	Satellite	Aerosols Batteries Adhesives Sealants
1057	Stran Steel 3 and 4	Satellite	Batteries Aerosols Rags Epoxies Resins
1081	Supply Cylinder/Storage Issue	90-Day	Unknown
1094	Auto Hobby	90-Day	Vehicle Maintenance Wastes Waste Oil Transmission Fluid Antifreeze Brake Fluid
1094	Auto Hobby	Satellite	Vehicle Maintenance Wastes Waste Oil Transmission Fluid Antifreeze Brake Fluid
1095	Labor Shop Compound East of Building 1095	90-Day	Aerosols Rags Paints Adhesives Fluorescent Tubes
1340	Auto Repair/Parts Supply	90-Day	Vehicle Maintenance Wastes
1342	Public Works Heavy Duty Repair Shop	90-Day	Vehicle Maintenance Wastes
1342	Public Works Heavy Duty Repair Shop	Satellite	Vehicle Maintenance Wastes
1343	Public Works Transportation Steam Rack Separator Tank	Tank	Oil Oily Water
1371	Propulsion Research Lab Shop	Satellite	Rags
1371	Propulsion Research Lab Bay 1	Satellite	Rags Aerosol Cans Batteries Cutting Fluid
1400	Lauritsen Lab Room C33	Satellite	Oily Rags Aerosol Cans Resin
2186	GSE Compound	90-Day	Unknown
2186	NAF GSE Oil/Water Separator for Washrack	Tank	Oily Wastewater Waste Oil
2326	DRMO Yard, Recycling Scrap Metal Sorting Area	90-Day	Batteries Fluorescent Tubes Ballasts Compressors

Building Number	Accumulation Area Description	Facility Type	Wastes Stored
2329	SWARM Research Laboratory	Satellite	Unknown
2466	Engineering Building Materials Lab Room 2000	Satellite	Mixed Organic Solvents Used Silica Gel Aerosol Cans Acids
2466	Engineering Building Materials Lab Room 2000E	Satellite	Lab Waste in Fume Hood
2631	Golf Course Maintenance	Satellite	Waste Oil Batteries
2631	Golf Course Maintenance Outside Building	Satellite	Waste Oil Batteries
2660	Michelson Lab Composites Lab	Satellite	Resins Spent Rags Composite Scrap
2664	General Dynamics Building	Satellite	Aerosols Batteries
2680	Seabee Training Unit Compound	Satellite	Oil Hydraulic Fluid Floor Sweep Aerosols Rags
3882	Chemical Storage	90-Day	Mixed Organic Solvents Used Silica Gel Aerosol Cans Acids
10180	Fuse Development Office	90-Day	Sealants Fuels Aerosol Cans
10520	Ballistics Test Lab	Satellite	Unknown
10690	CLPL Weapons Integration Lab	Satellite	Rags Aerosol Cans
11080	CLPL Model Shop	Satellite	Rags Epoxies Aerosol Cans
11100	Logistics Management Support Facility	Satellite	Rags
11530	Fuze Department Electo Lab	Satellite	Unknown
11580	Salt Wells Weld and Pipe Shop Room 23	Satellite	Oily Rags Empty Cutting Oil Containers
11580	SWPL Machine Shop Room 25	Satellite	Aerosols Cutting Fluids Small Containers
11620	Photo/Video Lab	Satellite	Soldering Wastes
11680	Environ Cond/Carpenter Shop	90-Day	Aerosols Paint Cans Batteries
11691	Plumbing Storage	Satellite	Fluorescent Tubes
12050	RDT&E Storage	Satellite	Batteries
12540	Solvent Shed	Satellite	Photo Developer Batteries Aerosols
14502	Expl & Prop Lab	Tank	Waste Water
14506	Chemical Storage Facility	90-Day	Lab Waste
14554	Salt Wells Waste Water Treatment Plant	Tank	Waste Water
15511	SWPL Explosive Lab	Satellite	Aerosols Paint Cans Batteries
15530	300 Ton Press Building	Tank	Waste Water
15560	SWPL, Quality Control Lab	90-Day	Solvents

Building Number	Accumulation Area Description	Facility Type	Wastes Stored
			Acids
15564	Explosives Operation Building	Tank	Waste Water
15590	Mixing/Casting Building/Assembly	Tank	Waste Water
15700	SWPL Explosive Chemical Lab Outside	90-Day	Solvents Lab Waste
15700	SWPL Explosive Chemical Lab, Room 105	Satellite	Solvents Lab Waste
15700	SWPL Explosive Chemical Lab, Room 104	Satellite	Solvents
15700	SWPL Explosive Chemical Lab, Room 103	Satellite	Unknown
15700	Explosive Chemical Lab	Tank	Waste Water
15730	Cast Prop Mix Building	Tank	Waste Water
15743	Cast Prop Mix Building	Tank	Waste Water
15750	Prop Cure Building	Tank	Waste Water
15813	Control Building 150 Gallon Mixer	Tank	Waste Water
15816	Salt Wells Wash Out Facility	90-Day	Tank Wastes
15956	SWPL Solvent Shelter	90-Day	Solvents Aerosols Batteries
15980	Oxidizer Prep Building	Tank	Waste Water
16011	CT-4	Satellite	Aerosol Cans
16111	Skytop Engineering Offices	90-Day	Hydraulic Oil Sealants RTV
16120	Skytop Bay 4	90-Day	Inhibited Red Fuming Nitric Acid Mixed Amine Fuel
16171	Skytop Weld Shop	Satellite	Aerosols
20000	NAF Hanger 3, Outside, West	90-Day	Hydraulic Fluid Motor Oil JP-8 Empty Containers
20000	NAF Hanger 3, Inside, East Half of Hanger	Satellite	Hydraulic Fluid Motor Oil JP-8 Rags Empties
20000	NAF Hanger 3, Inside, West Half of Hanger (west wall)	Satellite	Hydraulic Fluid Motor Oil JP-8 Empty Containers
20001	NAF between Hangars 1 and 3 for VX-9	90-Day	Fuels Pigmats Hydraulic Fluid Rags Batteries Used Filters
20002	NAF Hangar 2 (British) SW Inside	90-Day	Rags Pigmats Aerosols Empty Containers
20002	NAF Hangar 2 (British) NW Outside Tank	Tank	Waste Hydraulic Fluid Motor Oil JP-8
20159	X Pad Parts Shelter	90-Day	Aircraft Maintenance Wastes
20188	Refueler Maintenance Facility	Satellite	Vehicle Maintenance Wastes

Building Number	Accumulation Area Description	Facility Type	Wastes Stored
20204	Hotline Tank	Tank	Waste Oil Jet Fuel
20214	NAF GSE Inside Building	Satellite	Hydraulic Fluid Motor Oil JP-8 Empty Containers
20220	Weapons Assembly	Universal Waste	Aerosols
20222	Fire Fighting Training Facility Oil/Water Separator	Tank	Fuel/Wastewater
20236	RDT&E Storage	Satellite	Brake Fluid Hydraulic Fluid
20279	Hangar 5	90-Day	Rags Coolant
20279	Hangar 5	Satellite	Unknown
20285	15 Feet South of Building	Satellite	Petroleum Wastes
20286	Fuel Farm	Satellite	JP-8 Rags
20286	Fuel Farm Oil/Water Separator	Tank	Filters Rags
25022	Open Shelter Inert Storage	90-Day	Aerosols Adhesives
30228	M45 Camera Repair	Satellite	Oily Wastewater
30229	Lower Baker Wastewater Collection Tank	Tank	Used Fuel Filters Oil Filters Rags
30330	Lower Baker Pad With Sunshade	90-Day	
30993	B Mountain Pistol Range	90-Day	Lead-Contaminated Wood Aerosols Shotgun Shells
30994	EODMU3 in Fenced Compound	Satellite	Waste Oil Aerosol Cans
31053	Main Mags Packing Shed Weapons Department	Universal Waste	Aerosol Cans
31068	Main Mags Initial Staging Weapons Department	Universal Waste	Aerosol Cans
31099	K-2 Fuel/Water Separator	Tank	Oily wastewater
31164	Minideck	Tank	Oily Wastewater Waste Fuel
31167	WSL Old Site, Large Fuel/Water Separator	Tank	Oily wastewater Waste Fuel
31173	WSL Old Site Small Fuel/Water Separator	Tank	Oily Wastewater
31192	WSL Machine Shop	Satellite	Rags Aerosols
31193	WSL Vehicle Maintenance Area	90-Day	Vehicle Maintenance Wastes
31377	Ground Operations G-2 Oil/Water Separator	Tank	Unknown
31406	Ground Operations	90-Day	Unknown
31418	Arm Weapons Program Office	Satellite	Paint Cans Aerosols
31454	Range Instrumentation Lab Room 205	Satellite	Aerosol Cans
31454	Range Instrumentation Lab Room 235	Satellite	Aerosol Cans
31466	MSIL Vehicle Shelter	90-Day	Unknown
31600	Warhead R/D Lab	Satellite	Unknown
31600	Warhead R/D Lab	Tank	JP-8
31624	Gas Gun Firing Site	Satellite	Aerosol Cans Adhesives

Building Number	Accumulation Area Description	Facility Type	Wastes Stored
31628	Hypervelocity Lab	Satellite	Aerosol Cans Adhesives
32513	IOB Machine Shop	Satellite	Oily Rags Oil Aerosols
32557	IOB Generator Shop Pad With Sunshade Near Building	90-Day	Diesel Fuel Oil Rags Electrolyte Bladders Aerosol Cans Antifreeze
32557	55-Gallon Drum Inside Building	Satellite	Oily Rags
32557	IOB Inside Battery Room at North end of Generator Shop	Satellite	Acids Empty Bladders
32557	IOB Oil/Water Separator	Tank	Oily Wastewater
32574	Area R Sunshade South of Building 31491	90-Day	Aerosols
32581	WSL Jet Engine Shop	Satellite	Rags
32615	WSL LFTE Fuel/Water Separator	Tank	Fuel Wastewater
33008	Junction Range North 40	Satellite	Vehicle Maintenance Wastes
33024	HAZMAT Pad Junction Ranch	90-Day	Waste Oil Vehicle Maintenance Wastes
33046	EOD TEU Compound	Satellite	Aerosol Cans Oil Batteries Rags
70003	Contractor Vehicle Maintenance	Satellite	Vehicle Maintenance Wastes
70005	Randsburg Wash Public Works Transportation	Satellite	Oil Rags Aerosols
70134	Superior Valley Range Control	Satellite	Waste Oil Aerosol Cans Rags Batteries Hydraulic Fluid
70153	Radar Spares/ECR	Universal Waste	Batteries
70162	Randsburg Wash Sunshades and Pad Near 70162	90-Day	Waste Oil Coolants Diesel Fuel Drysit Aerosols

Table E-2. Tier-Permitted Treatment Units

Tier	Unit ID	Description
Conditional Exemption	CRUSHER1	Drum Crusher at Hazardous Waste Storage and Transfer Facility
Permit by Rule	PHOTO2	Photo Lab – Silver Recovery Distillation

Table E-3. Installation Restoration Program Sites

Site	Site Name	Cause of Contamination	Medium	Status
1	Armitage Airfield Dry Wells	Substandard jet fuel was disposed of into dry wells.	Soil, Groundwater	RD/RA
2	Aircraft Washdown Drainage Ditches	Used engine fluids and solvents from maintenance activities were discharged into an unlined ditch.	Soil, Groundwater	RD/RA
3	Armitage Airfield Leach Pond	Sanitary and industrial waste from airfield operations were discharged into an evaporation/leach pond.	Soil, Groundwater	NFA
4	Beryllium-Contaminated Equipment Disposal Area	Beryllium-contaminated equipment and structures were burned and buried.	Soil	NFA
5	Burro Canyon	Propellant, Explosive and Pyrotechnic (PEP) and some non-PEP materials.	Soil	NFA
6	T-Range Disposal Area	Disposal of PEP materials and contaminated trash by open burning; residual wastes were buried in unlined trenches.	Soil	RD/RA
7	Michelson Laboratory Drainage Ditches	Acid and chemical wastes were discharged into unlined ditches.	Soil, Groundwater	RI/FS
8	Salt Wells Drainage Channels	Chemical waste waters were discharged into natural drainage channels.	Soil, Groundwater	ROD
9	Salt Wells Asbestos Trenches	Asbestos from various Station activities were disposed of in three slit trenches.	Soil	RI/FS
10	Salt Wells Disposal Trenches	Solid and liquid wastes from Salt Wells labs were disposed of in ten slit trenches.	Soil	RI/FS
11	China Lake Propulsion Labs (CLPL) Evaporation Ponds	Wastewater from PEP machining operations was discharged into unlined ponds.	Soil	PP/ROD
12	SNORT Road Landfill	Old gravel quarry was filled with hazardous and non-hazardous wastes from various activities.	Soil, Groundwater	LTMtg
13	Oily Waste Disposal Area	Waste oils from maintenance activities and grease traps were disposed of in two slit trenches.	Soil, Groundwater	RI/FS
14	ER Range Septic System	Lab and sanitary waste from five septic tanks were disposed of through leach lines.	Soil, Groundwater	NFA
15	R-Range Septic System	Industrial and sanitary wastes from a lab were discharged to a surface ditch and leach field.	Soil, Groundwater	ROD
16	G-1 Range Septic System	Sanitary and lab wastes were disposed of through leach lines	Soil, Groundwater	NFA
17	G-2 Range Septic System	Sanitary, explosive, and photo lab wastes were disposed of through leach lines.	Soil, Groundwater	NFA
18	CLPL Leach Fields	Sanitary and industrial wastes, including PEP and photo lab wastes, were disposed of in leach fields.	Soil, Groundwater	PP/ROD
19	Baker Range Waste Trenches	Miscellaneous range wastes were disposed of in one large slit trench.	Soil	EE/CA
20	Division 36 Ordnance Waste Area	Miscellaneous range wastes were disposed of in two slit trenches.	Soil	EE/CA
21	CT-4 Disposal Area	Hazardous wastes from weapons testing were disposed of in a slit trench.	Soil	NFA
22	Pilot Plant Road Landfill	Wastes from Navy housing and Public Works were disposed of in 12 trenches.	Soil, Groundwater	RI/FS
23	K-2 South Disposal Area	Range wastes and possibly chlordane were disposed of in three slit trenches.	Soil, Groundwater	SI

Site	Site Name	Cause of Contamination	Medium	Status
24	K-2 North Disposal Area	Range wastes were disposed of in two slit trenches.	Soil	EE/CA
25	G-2 Range Disposal Area	Miscellaneous range wastes were disposed of in three slit trenches.	Soil	EE/CA
26	G-2 Range Ordnance Waste Area	Miscellaneous range wastes were disposed of in two slit trenches.	Soil	EE/CA
27	NAF Disposal Site	Solid and liquid wastes from aircraft operations were disposed of in two slit trenches.	Soil, Groundwater	RI/FS
28	Old DPDO Storage Yard	Possible spills of PCBs from leaking transformers; no evidence of spills found.	Soil	NFA
29	G-1 Range East Disposal Area	Range wastes, chlordane, and possibly unexploded ordnance were disposed of in three trenches.	Soil	RI/FS
30	G-1 Range West Disposal Area	Range wastes and possibly unexploded ordnance were disposed of in two trenches.	Soil	EE/CA
31	Public Works Pesticide Rinse Area	Pesticide- and herbicide-contaminated rinse waters were spilled on the ground.	Soil, Groundwater	RI/FS
32	Golf Course Pesticide Rinse Area	Pesticide- and herbicide-contaminated rinse waters were spilled on the ground.	Soil, Groundwater	NFA
33	Michelson Lab Dry Wells	Small amounts of fluid from back-up power batteries were spilled or drained into dry wells.	Soil, Groundwater	RI/FS
34	Lauritsen Road Landfill	Inert and hazardous wastes were disposed of in several large trenches.	Soil, Groundwater	RI/FS
35	SNORT Track Accident	A small amount of beryllium-contaminated materials was buried at the site.	Soil	NFA
36	Snort Storage Sheds	Several small spills of hazardous materials occurred in small storage sheds.	Soil	NFA
37	Golf Course Landfill	Waste from the general China Lake community was disposed of in this small landfill.	Soil, Groundwater	RI/FS
38	Cactus Flat Disposal Trenches	Wastes from special test programs were disposed of in two small trenches.	Soil	NFA
39	CGEH-1 Geothermal Waste	Drilling mud and oil wastes were disposed of in an open pit.	Soil	NFA
40	Randsburg Wash #1	Range wastes were disposed of in three slit trenches.	Soil	NFA
41	Randsburg Wash #2	General and hazardous wastes were disposed of in two large pits.	Soil	NFA
42	Randsburg Wash #3	On-time disposal of 30 drums of fuel, which was burned in the drums.	Soil	SI
43	Minideck	Firefighting chemicals and unburned jet fuel were discharged into an unlined pond.	Soil, Groundwater	RI/FS
44	Armitage Field Fire Fighting Training Area	Firefighting chemicals and unburned jet fuel spilled on the pad and several pits were used for disposal of fuels.	Soil, Groundwater	RD/RA
45	NAF Maintenance Area	Aircraft maintenance wastes were disposed of in an unlined ditch.	Soil, Groundwater	RD/RA
46	Dunkit Drainage Ditch	Wastewater and chemicals from rocked motor casing cleaning were discharged into an unlined ditch.	Soil. Groundwater	PP/ROD
47	Michelson Lab Industrial Sewer System	Industrial wastewater from the Public Works compound and Michelson Lab were discharged to lined ponds.	Soil, Groundwater	RI/FS
48	Weapons Survivability Holding Ponds	Waste water and unburned jet fuel from weapons testing discharged to	Soil, Groundwater	NFA

Site	Site Name	Cause of Contamination	Medium	Status
		lined ponds.		
49	Salt Wells Propulsion Lab (SWPL) Industrial Waste Ponds and Sumps	Rinse water from various activities involved in propellant and explosive research was disposed of in ponds and sumps.	Soil, Groundwater	PP/ROD
50	Airplane Oil Disposal Trench	Waste engine oil was disposed of in a trench.	Soil	NFA
51	Area R East	Vehicle maintenance, hazardous materials storage, and inert waste disposal trenches.	Soil	NFA
52	Area R Warhead Firing Arena	No evidence of waste disposal.	None	NFA
53	Area R Laser Lab Leachline	Sanitary wastes were disposed of in a leach field.	Soil, Groundwater	NFA
54	Area R Slit Trenches	Two trenches used for disposal of warhead research test waste (Celotex bundles).	Soil, Groundwater	SI
55	Area R Solvent Rinse Tank and Vicinity	Contaminated fluids may have escaped from the solvent rinse tank.	Soil, Groundwater	PP/ROD
56	Area R Static Firing Rocked Test Stands	Mercury, and possibly acids, bleaches, and unidentified chlorinated solvents were released during the test firings of liquid propellant rockets.	Soil	NFA
57	Area R Warhead Research Pit	Construction debris was dumped in this area.	Soil	NFA
58	Armitage Field VX-5 Line Shack Storage Area	Asphalt appears contaminated from the storage of hazardous hydraulic fluid, oil, jet fuel, and solvents.	Soil	NFA
59	B-2 Spotting Tower 3 Quonset Hut	Area was used as a storage yard for the aircraft tire and brake shop.	Soil	NFA
60	B-2 Spotting Tower 3 Quonset Hut	Range wastes may have been dumped in this area.	Soil	NFA
61	B-3 Tower Dump	Range wastes were disposed of in a small trench.	Soil, Groundwater	SI
62	B-4 Start-Up Area	Wastewater from range operations was discharged to a septic system and dry well.	Soil	NFA
63	Dempsey Dumpster Station	Rinse water from dumpster cleaning.	Soil	SI
64	Earth and Planetary Sciences Leach Fields	Industrial wastewater was discharged to a septic system.	Soil, Groundwater	RD/RA
65	G-2 Range Gun Mounts	Guns were cleaned in the area.	Soil	NFA
66	HANS Test Site	Jet fuel was used in burn tests on composite materials, especially carbon fibers.	Soil	SI
67	Lane Haven Dump	Solid waste from a mobile home park was disposed of in this area.	Soil	NFA
68	Public Works Old PCB Transformer Storage Area	Possible transformer oil leakage.	Soil, Groundwater	Removal
69	Public Works Vehicle Paint Shop & Drainage Catch Basin	Contaminants from Public Works paint shop activities, such as paint and solvents, drained into the surface runoff collection basin.	Soil, Groundwater	RI/FS
70	Public Works Tank Truck Dry Well	Discharge of fuel from tank trucks into a dry well.	Soil, Groundwater	RI/FS
71	Public Works Heavy Duty Equipment Repair Shop Storage Area	Hazardous materials stored in this area may have spilled or leaked.	Soil	NFA
72	Railroad Engine House	Waste oil from diesel locomotives was discharged into a concrete-lined pit that drained into a dry well.	Soil, Groundwater	RI/FS
73	Randsburg wash Black Powder Assembly Building	Wastewater from black powder handling activities may have been discharged into floor drains.	Soil	NFA

Site	Site Name	Cause of Contamination	Medium	Status
74	Randsburg Wash Central Site Old Leach Field	Industrial wastewater from a photo lab, and maintenance and machine shops, was discharged to a septic system.	Soil, Groundwater	NFA
75	Randsburg Wash Gas Station	Vehicle maintenance activities.	Soil	NFA
76	Randsburg Wash Gun Line	Gun cleaning operations.	Soil	NFA
77	Sludge Pit	Road oil was disposed of in a pit.	Soil, Groundwater	SI
78	SNORT Old Photographic Lab Sumps	Photo processing wastes were discharged to a sump.	Soil, Groundwater	NFA
79	K2 1000 m Gunnery Range	Ordnance testing.	Soil	Removed from IRP
80	POI Small Locations	Various operation activities.	Soil	PA/SI

Notes:
EE/CA – Engineering Evaluation/Cost Analysis
LTMgt - Long-Term Management
NFA – No Further Action
PA – Preliminary Assessment
PP/ROD – Proposed Plan/Record of Decision
RD/RA – Remedial Design/Remedial Action
RI/FS – Remedial Investigation/Feasibility Study
SI – Site Inspection

Table E-4. Underground Storage Tanks

Tank Number	Tank Volume (gallons)	Contents	Construction Type	Status
Kern 1-1R	550	Diesel	Double Wall	In Use
Kern 4-21R	12,000	Unleaded Gasoline	Double Wall	In Use
Kern 4-22R	12,000	Unleaded Gasoline	Double Wall	In Use
Kern 5-4	10,000	Diesel	Double Wall	In Use
Kern 5-5	20,000	Gasoline	Double Wall	In Use
Kern 6-1	6,000	JP-8	Double Wall	In Use

Table E-5. Aboveground Storage Tanks

Tank Number	Building Number/Location	Tank Volume (gallons)	Contents
Inyo-01	33056	700	Diesel
Inyo-02	33047	500	Diesel
Inyo-04	33047	500	Unleaded Gasoline
Inyo-05	33047	500	Diesel
Inyo-06	33004	660	Diesel
Inyo-08	Junction Ranch	700	Unknown
Inyo-09	JCIF	700	Unleaded Gasoline
Inyo-10	JCIF	1,500	Diesel
Inyo-11	Darwin Wash EOD	Unknown	Unknown

Tank Number	Building Number/Location	Tank Volume (gallons)	Contents
Kern-02	00001	550	Diesel
Kern-03	20318	200,000	JP-8
Kern-04	20319	200,000	JP-8
Kern-05	20321	4,000	JP-8
Kern-06	20322	4,000	JP-8
Kern-08	20169	300	Diesel
Kern-10	20007	140	Diesel
Kern-11	20007	140	Diesel
Kern-12	20007	140	Diesel
Kern-13	20007	140	Diesel
Kern-14	20007	140	Diesel
Kern-15	20007	140	Diesel
Kern-16	01403	1,000	Diesel
Kern-17	20243	5,000	JP-8
Kern-18	20243	7,500	JP-8
Kern-19	20243	7,500	JP-8
Kern-25	20242	70	Diesel
Kern-26	20273	340	Diesel
Kern-27	20273	300	Diesel
Kern-28	20273	300	Diesel
Kern-33	20280	10,000	Unleaded Gasoline
Kern-35	20283	3,500	10/10 Oil
Kern-39	01103	550	Inactive (formerly Diesel)
Kern-39A	01103	Unknown	Unknown
Kern-40	02676	12,000	Unleaded Gasoline
Kern-41	02676	12,000	Diesel
Kern-42	02676	12,000	Diesel
Kern-46	01341	550	Diesel
Kern-50	50117	550	Diesel
Kern-52	30230	700	Diesel
Kern-53	20315	500	Diesel
Kern-54A	20214	500	JP-8
Kern-55	20278	30,000	JP-8
Kern-56	Golf Course	250	Unleaded Gasoline

Tank Number	Building Number/Location	Tank Volume (gallons)	Contents
Kern-57A	Golf Course	500	Diesel
Kern-57B	Golf Course	250	Unleaded Gasoline
Kern-59W	20002	480	Waste
Kern-60W	20204	480	Waste
Kern-61W	20001	480	Waste Fuel
Kern-65	984	120	Automatic Transmission Fluid
Kern-66	984	240	Engine Oil 15W-40
Kern-67	984	240	Engine Oil 5W-30
Kern-68	1342	120	Automatic Transmission Fluid
Kern-69	1342	120	Automatic Transmission Fluid
Kern-70	1342	240	Engine Oil 15W-40
Kern-71	1342	120	Hydraulic Fluid
Kern-72	1342	120	Hydraulic Fluid
Kern-73	1342	120	Engine Oil SAE 30
Kern-74	1342	120	Engine Oil SAE 40
SB-01	31220	10,000	JP-8
SB-02	31220	10,000	JP-8
SB-06	32611	10,000	JP-8
SB-07	32611	30,000	JP-8
SB-08	11040	2,000	Unleaded Gasoline
SB-09	32557	1,000	Diesel
SB-11	32571	1,000	Diesel
SB-12	32571	6,000	Diesel
SB-13	70155	1,000	Unleaded Gasoline
SB-14	14050	555	Diesel
SB-18	Randsburg Wash Central Site	2,000	Diesel
SB-19	70120	2,000	Unleaded Gasoline
SB-20	70156	1,000	Diesel
SB-21	70134	3,000	Diesel
SB-22	16157	1,000	Diesel
SB-23	Skytop	4,000	Inactive
SB-24	70036	200	Unknown

Tank Number	Building Number/Location	Tank Volume (gallons)	Contents
SB-25A	31193	250	Unleaded Gasoline
SB-25B	31193	250	Diesel
SB-26	01111	Unknown	Diesel
SB-27	70150	1,000	Diesel
SB-28	70150	1,000	Unknown
SB-29	70155	700	Diesel
SB-30	Mini Deck	300	JP-8
SB-40	303873	440	Various

Table E-6. Underground Storage Tank Contamination Sites

Site Number	Tank Number	Site Name/Location	Media Contaminated	Status
1	Kern 3-1	NAF Gas Station	Soil, Groundwater	Free product removal from two monitoring wells and groundwater monitoring
2	Kern 4-13 Kern 4-14	Public Works Gas Station	Soil, Groundwater	Free product removal from five soil vapor extraction monitoring wells and groundwater monitoring
3	SB 2-16	CLPL Gas Station	Soil	Ongoing investigation
4	Kern 4-20 Kern 4-21 Kern 4-22 Kern 4-23	Current NEX Gas Station	Soil	Remediation complete, pending closure
5	Kern 3-8 Kern 3-9 Kern 3-10 Kern 3-11 Kern 3-12 Kern 3-13	Old NAF Fuel Farm	Soil, Groundwater	Soil and groundwater remediation being conducted under IRP Site No. 1 Removal Action.

APPENDIX F

MODELED WEAPON EXPENDITURE DATA

Range	Weapon/Ammo Type	Firing Site	Firing Elevation (m)	Target Range	Target Height (m)	Baseline/ Existing Condition		Proposed Action	
						Daytime	Night time	Daytime	Night time
Baker	20 mm (I)	B4 Track Firing Point	0	BAKER: B4 TRACK TARGET POINT	0	2,979.68	156.83	3,724.59	196.03
	25 mm (I)	B4 Track Firing Point	0	BAKER: B4 TRACK TARGET POINT	0	285.00	15.00	356.25	18.75
	CBU-100	-	-	BAKER: B-1A TARGET AREA	0	22.33	1.18	27.91	1.47
	MK-76 (S)[4]	-	-	BAKER: B-1A TARGET AREA	0	48.93	2.58	61.16	3.22
	2.75" Rocket (I)[5]	BAKER: HALITE FIRING POINT	0	BAKER: B-1A TARGET AREA	152.4	320.63	16.88	400.78	21.09
	Zuni (I)[6]	BAKER: ELEVATED FIRING POINTS	152.4	BAKER: B-1A TARGET AREA	0	6.65	0.35	8.31	0.44
	AGM-114/Hellfire (H)[6]	BAKER: ELEVATED FIRING POINTS	152.4	BAKER: B-1A TARGET AREA	0	1.90	0.10	2.38	0.13
	Tomahawk (I)[7]	BAKER: HALITE FIRING POINT	0	BAKER: B-1A TARGET AREA	0	0.95	0.05	1.19	0.06
APL	20 mm (I)	AIRPORT LAKE: MAVERICK RD FIRING POINT	0	AIRPORT LAKE: MAVERICK RD TARGET POINT	0	142.50	7.50	178.13	9.38
	CBU-103 (H)	-	0	AIRPORT LAKE: TARGET AREA	0	1.90	0.10	2.38	0.13
	GBU-31 (H)	-	0	AIRPORT LAKE: TARGET AREA	0	2.38	0.13	2.97	0.16
	JDAM (H)	-	0	AIRPORT LAKE: TARGET AREA	0	8.55	0.45	10.69	0.56
	GBU-12 (H)	-	0	AIRPORT LAKE: TARGET AREA	0	3.80	0.20	4.75	0.25
	PGB (H)	-	0	AIRPORT LAKE: TARGET AREA	0	2.85	0.15	3.56	0.19
	MK-76 (S)[4]	-	0	AIRPORT LAKE: TARGET AREA	0	28.50	1.50	35.63	1.88

Range	Weapon/Ammo Type	Firing Site	Firing Elevation (m)	Target Range	Target Height (m)	Baseline/ Existing Condition		Proposed Action	
						Daytime	Night time	Daytime	Night time
	AGM-114/Hellfire (H)[6]	AIRPORT LAKE: ELEVATED FIRING POINTS	152.4	AIRPORT LAKE: TARGET AREA	0	11.88	0.63	14.84	0.78
	AGM-154 (I)[6]	AIRPORT LAKE: ELEVATED FIRING POINTS	152.4	AIRPORT LAKE: TARGET AREA	0	0.48	0.03	0.59	0.03
	AGM-154C (H)[6]	AIRPORT LAKE: ELEVATED FIRING POINTS	152.4	AIRPORT LAKE: TARGET AREA	0	0.48	0.03	0.59	0.03
	AIM-120 (I)[8]	AIRPORT LAKE: ELEVATED FIRING POINTS	152.4	AIRPORT LAKE: TARGET AREA	152.4	0.95	0.05	1.19	0.06
	EP II (H)	-	0	AIRPORT LAKE: TARGET AREA	0	2.38	0.13	2.97	0.16
	TOW (H)[6]	AIRPORT LAKE: STORMVILLE FIRING POINT	152.4	AIRPORT LAKE: TARGET AREA	0	1.90	0.10	2.38	0.13
Coso	AIM-120 (I)[8]	COSO: ELEVATED FIRING POINTS	152.4	COSO: COSO NORTH TARGET AREA	152.4	0.48	0.03	0.59	0.03
George	20 mm (I)	GEORGE: X-3 FIRING POINT	0	GEORGE: X-3 TARGET AREA	0	10,449.05	549.95	13,061.31	687.44
	25 mm (I)	GEORGE: X-3 FIRING POINT	0	GEORGE: X-3 TARGET AREA	0	308.75	16.25	385.94	20.31
	155 mm (I)	GEORGE: X-3 FIRING POINT	0	GEORGE: X-3 TARGET AREA	0	28.03	1.48	35.03	1.84
	5-in 54 caliber (P)	GEORGE: X-3 FIRING POINT	0	GEORGE: X-3 TARGET AREA	0	26.60	1.40	33.25	1.75
	81 mm (H)	GEORGE: X-3 FIRING POINT	0	GEORGE: X-3 TARGET AREA	0	4.75	0.25	5.94	0.31
	120 mm (H)	GEORGE: X-3 FIRING POINT	0	GEORGE: X-3 TARGET AREA	0	4.75	0.25	5.94	0.31
	JDAM (H)	-	152.4	GEORGE: PMT TARGET AREA	0	8.08	0.43	10.09	0.53
	MK-82 (H)	-	152.4	GEORGE: PMT TARGET AREA	0	0.95	0.05	1.19	0.06
	DMGB 31	-	152.4	GEORGE: PMT TARGET AREA	0	14.73	0.78	18.41	0.97

Range	Weapon/Ammo Type	Firing Site	Firing Elevation (m)	Target Range	Target Height (m)	Baseline/ Existing Condition		Proposed Action	
						Daytime	Night time	Daytime	Night time
	GBU-38 (I)	-	152.4	GEORGE: PMT TARGET AREA	0	1.43	0.08	1.78	0.09
	PGB (H)	-	152.4	GEORGE: PMT TARGET AREA	0	0.95	0.05	1.19	0.06
	2.75" Rocket (H)[5]	GEORGE: G-6 FIRING POINT	0	GEORGE: DROP ZONE TARGET AREA	152.4	14.25	0.75	17.81	0.94
	2.75" Rocket (I)[5]	GEORGE: G-6 FIRING POINT	0	GEORGE: DROP ZONE TARGET AREA	152.4	6.18	0.33	7.72	0.41
	AGM-84H - SLAM (I)[6]	GEORGE: ELEVATED FIRING POINTS	152.4	GEORGE: PMT TARGET AREA	0	0.48	0.03	0.59	0.03
	AGM-114/Hellfire (H)[6]	GEORGE: ELEVATED FIRING POINTS	152.4	GEORGE: PMT TARGET AREA	0	4.75	0.25	5.94	0.31
	AGM-154 (I)[6]	GEORGE: ELEVATED FIRING POINTS	152.4	GEORGE: PMT TARGET AREA	0	1.90	0.10	2.38	0.13
	AGM-154C (H)[6]	GEORGE: ELEVATED FIRING POINTS	152.4	GEORGE: PMT TARGET AREA	0	1.43	0.08	1.78	0.09
	AIM-9 Sidewinder (I)[8]	GEORGE: ELEVATED FIRING POINTS	152.4	GEORGE: DROP ZONE TARGET AREA	152.4	3.33	0.18	4.16	0.22
	EP II (H)	-	-	GEORGE: PMT TARGET AREA	0	0.48	0.03	0.59	0.03
	RAM (I)[5]	GEORGE: CENTERLINE RD FIRING POINT	0	GEORGE: DROP ZONE TARGET AREA	152.4	0.48	0.03	0.59	0.03
	SRAW (H)[7]	GEORGE: CENTERLINE RD FIRING POINT	0	GEORGE: PMT TARGET AREA	0	7.13	0.38	8.91	0.47
	Tomahawk (I)[7]	GEORGE: CENTERLINE RD FIRING POINT	0	GEORGE: PMT TARGET AREA	0	3.33	0.18	4.16	0.22
	UK Brimstone[6]	GEORGE: ELEVATED FIRING POINTS	152.4	GEORGE: DROP ZONE TARGET AREA	0	0.95	0.05	1.19	0.06
Charlie	20 mm (I)	CHARLIE: NORTH CHARLIE FIRING POINT	0	CHARLIE: FLR 3 TARGET AREA	0	1,550.88	81.63	1,938.59	102.03

Range	Weapon/Ammo Type	Firing Site	Firing Elevation (m)	Target Range	Target Height (m)	Baseline/ Existing Condition		Proposed Action	
						Daytime	Night time	Daytime	Night time
	GBU-12	-	-	CHARLIE: C-3 #2 TARGET AREA	0	0.95	0.05	1.19	0.06
	GBU-31	-	-	CHARLIE: C-3 #2 TARGET AREA	0	0.95	0.05	1.19	0.06
	JDAM/GBU-32	-	-	CHARLIE: C-3 #2 TARGET AREA	0	5.23	0.28	6.53	0.34
	MK-83	-	-	CHARLIE: C-3 #2 TARGET AREA	0	0.95	0.05	1.19	0.06
	MK-84	-	-	CHARLIE: C-3 #2 TARGET AREA	0	2.85	0.15	3.56	0.19
	BDU-48/MK-106	-	-	CHARLIE: C-3 #2 TARGET AREA	0	48.93	2.58	61.16	3.22
	MK-76/BDU-33	-	-	CHARLIE: C-3 #2 TARGET AREA	0	98.80	5.20	123.50	6.50
Wingate	20 mm (I)	WINGATE FIRING POINT	0	WINGATE TARGET POINT	0	2,316.58	121.93	2,895.72	152.41
	MK-82	-	-	WINGATE TARGET AREA	0	5.70	0.30	7.13	0.38
	MK-83	-	-	WINGATE TARGET AREA	0	0.95	0.05	1.19	0.06
	BDU-48/MK-106	-	-	WINGATE TARGET AREA	0	109.73	5.78	137.16	7.22
	MK-76/BDU-33	-	-	WINGATE TARGET AREA	0	189.05	9.95	236.31	12.44
	SDB	-	-	WINGATE TARGET AREA	0	1.90	0.10	2.38	0.13
Superior Valley	20 mm (I)	SUPERIOR VALLEY FIRING POINT	0	SUPERIOR VALLEY TARGET POINT	0	46,417.00	2,443.00	58,021.25	3,053.75
	27 mm	SUPERIOR VALLEY FIRING POINT	0	SUPERIOR VALLEY TARGET POINT	0	313.03	16.48	391.28	20.59

Range	Weapon/Ammo Type	Firing Site	Firing Elevation (m)	Target Range	Target Height (m)	Baseline/ Existing Condition		Proposed Action	
						Daytime	Night time	Daytime	Night time
	MK-82	-	-	SUPERIOR VALLEY TARGET POINT	0	16.63	0.88	20.78	1.09
	MK-83	-	-	SUPERIOR VALLEY TARGET POINT	0	6.65	0.35	8.31	0.44
	GBU-12	-	-	SUPERIOR VALLEY TARGET POINT	0	16.15	0.85	20.19	1.06
	GBU-16	-	-	SUPERIOR VALLEY TARGET POINT	0	2.85	0.15	3.56	0.19
	BDU-48	-	-	SUPERIOR VALLEY TARGET POINT	0	1,009.38	53.13	1,261.72	66.41
	BDU-45	-	-	SUPERIOR VALLEY TARGET POINT	0	83.13	4.38	103.91	5.47
	BDU-50	-	-	SUPERIOR VALLEY TARGET POINT	0	5.70	0.30	7.13	0.38
	BDU-33	-	-	SUPERIOR VALLEY TARGET POINT	0	47.98	2.53	59.97	3.16
	MK-76	-	-	SUPERIOR VALLEY TARGET POINT	0	8,168.58	429.93	10,210.72	537.41
	2.75" Rocket[5]	SUPERIOR VALLEY FIRING POINT	0	SUPERIOR VALLEY ELEVATED TP	152.4	324.90	17.10	406.13	21.38
Area R	High Explosive (lbs NEW)[9]	AREA R	0	-	-	2,228.23	117.28	2,785.28	146.59
B-Mountain	C-4 (lbs)[10]	BLACK MOUNTAIN	0	-	-	541.50	28.50	676.88	35.63
Burro Canyon	High Explosive (lbs NEW)[9]	BURRO CANYON	0	-	-	2,256.25	118.75	2,820.31	148.44
	TNT (lbs)	BURRO CANYON	0	-	-	31,350.00	1,650.00	39,187.50	2,062.50
Box Canyon	Data Sheet .125[11]	DARWIN WASH	0	-	-	266.00	14.00	332.50	17.50

Range	Weapon/Ammo Type	Firing Site	Firing Elevation (m)	Target Range	Target Height (m)	Baseline/ Existing Condition		Proposed Action	
						Daytime	Night time	Daytime	Night time
	Dynamite[12]	DARWIN WASH	0	-	-	106.40	5.60	133.00	7.00
	Exrod[13]	DARWIN WASH	0	-	-	53.20	2.80	66.50	3.50
	Satchel Charge C-4[10]	DARWIN WASH	0	-	-	79.80	4.20	99.75	5.25
	TNT (lbs)	DARWIN WASH	0	-	-	106.40	5.60	133.00	7.00
Cactus Flats	High Explosive (lbs NEW)[9]	UPPER & LOWER CACTUS FLATS	0	-	-	1,076.35	56.65	1,345.44	70.81
CLPL	Propellants (lbs NEW)[14]	CLPL	0	-	-	594,890.00	31,310.00	743,612.50	39,137.50
CT-1	High Explosive (lbs NEW)[9]	CT-1	0	-	-	2,843.35	149.65	3,554.19	187.06
	Propellants (lbs NEW)[14]	CT-1	0	-	-	220.40	11.60	275.50	14.50
CT-4	High Explosive (lbs NEW)[9]	CT-4	0	-	-	11,865.98	624.53	14,832.47	780.66
	Propellants (lbs NEW)[14]	CT-4	0	-	-	1,720.45	90.55	2,150.56	113.19
CT-6	High Explosive (lbs NEW)[9]	CT-6	0	-	-	546.73	28.78	683.41	35.97
	Propellants (lbs NEW)[14]	CT-6	0	-	-	5.23	0.28	6.53	0.34
Darwin Wash	C-4 (lbs)[10]	DARWIN WASH	0	-	-	498.75	26.25	623.44	32.81
	Smoke Grenade	DARWIN WASH	0	-	-	106.40	5.60	133.00	7.00
Weapons Survivability Laboratory	Gun Powder (grams)[14]	WEAPONS SURVIVABILITY LAB	0	-	-	1,809.86	95.26	2,262.33	119.07
	High Explosive (lbs NEW)[9]	WEAPONS SURVIVABILITY LAB	0	-	-	380.00	20.00	475.00	25.00
	Squibs/Initiators (grams)[14]	WEAPONS SURVIVABILITY LAB	0	-	-	241.32	12.70	301.64	15.88
	Propellants (lbs NEW)[14]	WEAPONS SURVIVABILITY LAB	0	-	-	2,850.00	150.00	3,562.50	187.50

Notes & Assumptions

1. Average range operational days = 234 per year.
2. All firing and target areas and points are assumed to be at ground level and not buried.
3. Average range operational daytime and nighttime (10PM-7AM) percentages: 95% day shots and 5% night shots.
4. Modeled as spot charge (1 lb C-4).
5. Modeled as ground-to-air operations.
6. Modeled as air-to-ground operations.
7. Modeled as ground-to-ground operations.
8. Modeled as air-to-air operations.
9. Modeled as 1, 5, 10, and 20 lb TNT, each 25% of total NEW.
10. Modeled as 1, 5, 10, and 20 lb C-4, each 25% of total NEW.
11. Modeled as 0.139 lb demo charge (sheet).
12. Modeled as 1, 5, 10, and 20 lb military dynamite, each 25% of total NEW.
13. Modeled as 0.11 lb TNT.
14. Modeled as 1, 5, 10, and 20 lb black powder, each 25% of total NEW.

APPENDIX G

AIR QUALITY EMISSIONS ANALYSIS

1. Introduction

This Air Quality Emissions Analysis describes the criteria air pollutant and greenhouse gas emissions analysis, and Clean Air Act (CAA) General Conformity Rule applicability analysis conducted for the 2014 Naval Air Weapons Station at China Lake (NAWSCL) Environmental Impact Statement (EIS)/Legislative Environmental Impact Statement (LEIS). This analysis describes emissions for the baseline condition and the Proposed Action, including an estimate of the following:

1. Aircraft operational emissions from Armitage Airfield operations;
2. Aircraft operational emissions from range flight operations;
3. Ordnance and explosive detonation emissions;
4. Vehicle emissions and unpaved road fugitive dust from range training and weapon testing.
5. Other stationary source emissions;
6. Greenhouse gas (GHG) emissions;
7. Support data for emissions analyses; and
8. Draft Record of Non-Applicability (RONA).

Under the No Action Alternative, since no action components have been specifically identified for both operational and construction/demolition activities, the emissions cannot be reasonably forecasted and discussed in this analysis. However, because the land withdrawal would not be renewed likely resulting in an elimination of the majority of current military operational activities, it is anticipated that a substantial reduction of military operational emissions around NAWSCL would occur as compared to baseline condition.

2. Methodology

2.1 AIRCRAFT OPERATIONAL EMISSIONS FROM ARMITAGE AIRFIELD OPERATIONS

An estimate of annual aircraft emissions from airfield operations at NAWSCL was based on the estimated annual number of flight operations and on-installation maintenance for stationed aircraft at NAWSCL, and the following methodology and emission factor documents and models:

- U.S. Environmental Protection Agency (USEPA) mobile sources methodology identified in *Procedures of Emission Inventory Preparation, Volume IV: Mobile Sources* (USEPA 1992).
- Aircraft engine emission factors developed by the Navy's Aircraft Environmental Support Office (AESO) for Navy aircraft.
- U.S. Air Force's Air Conformity Applicability Model (ACAM) for Air Force aircraft.
- Federal Aviation Administration (FAA)-developed Emissions and Dispersion Modeling System (EDMS) for other aircraft.
- The anticipated number of aircraft sorties presented in the *Aircraft Noise Study for Naval Air Weapons Station China Lake* (Wyle 2010) and *Air Installations Compatible Use Zones Study Naval Air Weapons Station China Lake* (U.S. Navy 2011a).
- *Range Complex Management Plan Land Ranges Operations Data Book* (U.S. Navy 2011c).

2.2 AIRCRAFT OPERATIONAL EMISSIONS FROM RANGE FLIGHT OPERATIONS

The annual aircraft emissions from range flight operations at NAWSCL were estimated using the operational sortie forecast presented in the 2011 range operational requirement document, aircraft cruise emission factors provided in the same emission factor documents or models as listed previously, and the 2004 EIS-established range flight profiles. The additional documents used specifically for range flight operational emissions include:

- *Naval Air Warfare Center Weapons Division Operational Requirements Document* (U.S. Navy 2011b).
- 2004 EIS-provided range-specific flight hours and altitude profiles (U.S. Navy 2004).

The range flight profiles and associated flight sorties and hours below 3,000 feet (914 meters) established in the 2004 EIS were first summarized. These early published operational data were then used to correlate and prorate the most recent documented range flight sorties in the 2011 range operational requirement document to ultimately predict the flight hours within each range. These flight hours were then multiplied with corresponding aircraft emissions factors to predict both baseline and Proposed Action range flight emissions for the 2014 EIS/LEIS.

2.3 MUNITIONS AND EXPLOSIVE DETONATION EMISSIONS

Munitions emissions are generated from gunfire, missiles, bombs, and other types of munitions explosive detonations used in various operations. To estimate munitions emissions, the number of munitions totaled in the range operational requirement document was divided into each applicable weapon category and type. Where available, emission factors for munitions emissions were based on the USEPA's AP-42-published emission factor database (listed below) that covers a variety of

weapons, from small arms (smaller than 20 mm guns) to large weapons (rockets, demolition charges, and projectiles).

- AP-42 Chapter 15 Ordnance Detonation (USEPA 2006).

Where AP-42 data were not available, emission factors defined from published NAWSCL environmental documents were employed including:

- *Southern California Range Complex Environmental Impact Statement/Overseas Environmental Impact Statement* (U.S. Navy 2008).

- *Draft Environmental Impact Statement Land Acquisition and Airspace Establishment to Support Large-Scale Marine Air Ground Task Force Live Fire and Maneuver Training* (U.S. Marine Corps 2011).

2.4 VEHICLE EMISSIONS AND UNPAVED ROAD FUGITIVE DUST FROM RANGE TRAINING AND WEAPON TESTING

Vehicle operations associated with range training including ground troop training and weapon testing and evaluation training would generate emissions from vehicle exhausts and fugitive dust from vehicles traveling on unpaved roadways within range areas. Therefore, both vehicle exhaust emissions and fugitive dust emissions were estimated.

Vehicle exhaust emissions were estimated using the California Air Resources Board EMFAC 2007 emission factor model. This model was used to determine emissions based on the type of training vehicle and fuel type at an assumed speed of 25 miles per hour (mph) for vehicles such as High Mobility Multipurpose Vehicles (HMMWV) and other pickup trucks (which were modeled as light-duty diesel trucks and light-duty gasoline trucks). Season-sensitive emission factors were employed and were modeled for each given season (e.g., volatile organic compounds [VOCs] and nitrogen oxides [NO_x] were analyzed for summer and carbon monoxide [CO] was analyzed for winter). The emission factors were then multiplied by the annual vehicle miles traveled for each type of modeled vehicle during the training and weapons testing periods.

Fugitive dust emissions resulting from vehicle operations on unpaved roadways were estimated using the USEPA AP-42 (USEPA 2006) unpaved roads emission factor formula in association with the number of vehicle miles travelled (VMT):

$$E = k(s/12)^a(S/30)^d / (M/0.5)^c - C$$

Where:

k, a, c, and d are empirical constants

E = size specific emission factor (lb/VMT)
s = surface material silt content (%)
M = surface material moisture content (%)
S = mean vehicle speed (mph)
C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear.

Because the number of on-installation personnel remains the same under the Proposed Action as compared to the baseline condition, potential changes in vehicle emissions and paved roadway fugitive dust emissions within the NAWSCL cantonment is not reasonably foreseeable. Therefore

the vehicle emissions on pave roadways and paved roadway fugitive dust emissions are not considered in this analysis.

2.5 OTHER STATIONARY SOURCE EMISSIONS

The 2010 NAWSCL Title V emissions fee inventory for stationary sources was used as the basis for determining baseline emissions from stationary sources in the Great Basin Valleys Air Basin, including boilers, tanks, etc. In the 2010 fee inventory, annual fuel consumption rates were used in association with the corresponding emissions factors to determine individual stationary source categories.

The 2010 NAWSCL Title V emission inventories for stationary sources located within other air pollution control districts, i.e., the Eastern Kern Air Pollution Control District (EKAPCD) in Kern County and the Mojave Desert Air Quality Management District (MDAQMD) in San Bernardino County, were obtained from the California Hotspots Analysis Reporting Program (HARP) database.

2.6 GREENHOUSE GAS EMISSIONS

The primary GHG emitted by human activities in the United States is CO_2, representing approximately 85% of total GHG emissions. The largest source of CO_2, and of overall GHG emissions, is fossil fuel combustion. Methane (CH_4) emissions, which are also GHG emissions result primarily from enteric fermentation (digestion) associated with domestic livestock, decomposition of wastes in landfills, and natural gas systems, and have declined from 1990 levels. Agricultural soil management and mobile source fuel combustion are the major sources of nitrous oxide (N_2O) emissions in the United States, which constitute the remaining balance of those GHG emissions produced by combustion sources.

The CO_2 emissions estimates provided in this analysis utilize the same methodology used to predict emissions for criteria pollutants. To determine CO_2 equivalency (CO_2e) for both mobile and stationary combustion sources considered in the analysis, the inventory ratios among CO_2, CH_4 and N_2O summarized in the most recent USEPA inventory report (USEPA 2009) were used as the basis to estimate the contributions to GHG emissions from CH_4 and N_2O emission levels.

In 2007, the United States generated about 7,150 teragrams (Tg) (or million metric tons) of CO_2e (USEPA 2009). Within this inventory, the CO_2, CH_4 and N_2O contributions from the fossil fuel combustion process for mobile and stationary sources included approximately:

- 5,736 (Tg) (or million metric tons) of CO_2.
- 9 Tg CH_4.
- 45 Tg N_2O.

Based on the above three levels of CO_2e, the GHG contribution from CH_4 and N_2O is less than 1% of the total CO_2e for fossil fuel combustion sources. Therefore the total CO_2e level was presented in this analysis in terms of CO_2 level.

3. Air Emissions Analysis

3.1 AIRCRAFT OPERATIONAL EMISSIONS FROM ARMITAGE AIRFIELD OPERATIONS

Aircraft engines emit criteria pollutants during all phases of aircraft operation. Operation types at NAWSCL include: departures, instrument/visual arrivals, and touch-and-go patterns. Arrivals consist of the following types: tactical air navigation (TACAN), straight-in (non-break), and overhead and carrier breaks.

The methodology for estimating aircraft emissions involves the evaluation of many variables, including:

- The type of operations conducted for each type of aircraft;
- The number of arrivals and departures and touch-and-go patterns; and the
- Determination of the type of aircraft engine and the mode of operation used for each type of aircraft engine.

Aircraft flights, for the most part, originate from Armitage Field, but some flights originate off the installation.

The Armitage Airfield aircraft operations used for this emissions estimate are based on the data presented in *Aircraft Noise Study for NAWS China Lake* (Wyle 2010) under both baseline and Proposed Action conditions. The actual operational inputs used for the analysis are included in Attachment 1 of this Appendix.

Under the baseline condition, the majority of operation types conducted at Armitage Airfield includes Hornets or Harriers. The top users of the airfield are the F/A-18 E/F Super Hornets, with 54 percent of the total operations. F/A-18 (A through D) Legacy Hornets are the next most frequent users of the airfield, with approximately 20 percent of the total operations. AV-8B Harriers and Other Military (OM) jets each contribute approximately 11 percent of the total operations. The remaining 15 percent of operations are conducted by various other aircraft types, including EA-6B Prowlers, Navy/Marine and other military helicopters, propeller-driven aircraft, unmanned aerial vehicles, and general aviation and air carrier aircraft. Various arrival and departure patterns identified in the study for modeled specific aircraft types (i.e., F/A-18E/F, F/A-18A-D, AV-8, and EA-6B) were considered in association with corresponding emissions factors provided by the Navy's Aircraft Environmental Support Office (AESO).

For OM Jets and other aircraft for which no specific aircraft type is defined in the noise study, the aircraft and associated operation distribution profiles presented in Tables 3 and 4 of *Range Complex Management Plan Land Ranges Operations Data Book* (U.S. Navy 2011c) were used to prorate the specific aircraft type and associated flight operations. Among these aircraft and helicopters, the available AESO-provided emissions factors were used for the majority of aircraft types. The United States Air Force's Air Conformity Applicability Model (ACAM) was used for the remaining aircraft.

Under the Proposed Action, future airfield operations would increase by up to 25 percent from the baseline condition and several aircraft types would likely be replaced. These changes are summarized below:

- Increase of total Armitage Airfield flight operations by 25 percent relative to the baseline condition;

- The one-for-one replacement of EA-6B Prowler aircraft operations by EA-18G Growler operations;

- Introduction of F-35C Lightning II (i.e., Joint Strike Fighter [JSF]) operations comprising 20 percent of total airfield flight operations and 50 percent of total Baker Range sorties; and

- Proportional reduction of F/A-18C/D Hornet and AV-8B Harrier II aircraft operations due to the introduction of F-35C flight operations.

- A substantial increase in demand of flying Unmanned Aerial Vehicles (UAVs) at the airfield and within various ranges. Additional UAV flight operations were considered in emissions estimates and are presented sepreately in Attachement 1.

Under the Proposed Action, the F/A-18E/F Super Hornets would still be the most-prevalent aircraft comprising 62 percent of the total flight operations. F-35Cs would be the second most prevalent aircraft, with 20 percent of the total flight operations.

The same emission factor resources used for baseline condition emission estimates were used for the Proposed Action. The emissions factors for F-35Cs are based on the same database used for *Environmental Assessment/Overseas Environmental Assessment for the F-35 Joint Strike Fighter Initial Operational Test and Evaluation* (U.S. Air Force 2009).

The annual estimated emissions for the baseline condition and the Proposed Action are summarized in Table G-1. The supporting data used for estimating aircraft emissions from flight operations at Armitage Airfield is presented in Attachment 1.

Table G-1 Aircraft Emissions at Armitage Airfield

Action	Annual Emissions (Tons per Year) [1]						
	VOC[2]	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$[3]**	**CO_2[4]**
Baseline Condition	320.6	124.7	1,028.1	4.8	82.6	82.6[1]	31,763.4
Proposed Action	346.8	159.9	1,164.8	6.6	95.9	95.9[1]	39,881.3

[1] Include additional UAV emissions within Armitage Airfield and ranges.
[2] VOC emissions = HC emissions * 1.15
[3] Conservatively assumed to be the same as PM_{10}.
[4] Metric tons.

3.2 AIRCRAFT OPERATIONAL EMISSIONS FROM RANGE FLIGHT OPERATIONS

The methodology for estimating aircraft flight emissions during range training and weapons testing involves determining the number of aircraft operational hours for each aircraft type operating at or below 3,000 feet (914 meters), where the atmospheric inversion layer is present. The total operational hours for each aircraft type (operating at or < 3,000 feet) was then multiplied by the aircraft emission factors (provided under the cruise flight mode for most aircraft) to estimate the total range aircraft flight emissions. Aircraft flights within the ranges, for the most part, originate from Armitage Field, but some flights originate off the installation.

Range flight operations include a variety of aircraft tests and training activities, which occur throughout the NAWSCL ranges. The majority of these operations occur at altitudes greater than 3,000 feet (914 meters) above ground level. To determine each aircraft's number of range flight hours for the baseline condition the following assumptions were used in the estimate:

- The range flight profile established in the 2004 EIS for each aircraft would remain the same for the baseline condition. Thus, the flight duration below 3,000 feet (914 meters) during each mission, within each subrange would be the same as that of the 2004 EIS under the baseline condition. The JSF profile is considered to be the same as F/A-18E/F under the Proposed Action.

- The aircraft sortie distribution profile for each aircraft type operating within North, Echo, and Superior Valley ranges for the baseline condition (as provided in *Naval Air Warfare Center Weapons Division Operational Requirements Document* [U.S. Navy 2011]) would remain the same as that of the 2004 EIS.

- Under the Proposed Action, F/A-18 range flight operations below 3,000 feet under the baseline condition would be replaced with F-35C operations.

- Under the Proposed Action relative to the baseline condition, there would be an increase of range flight operations by 25 percent within the North and Echo Ranges and 5 percent within Superior Valley Range. These percent increases are somewhat consistent with the percent values provided for range operations in the F-35C West Coast Homebasing EIS.

- The total baseline condition flight hours for each aircraft are proportional to those presented in the 2004 EIS.

In the estimate, 2004 EIS-established flight sortie information and the average range flight hours for each sortie was summed for North, Echo, and Superior Valley Ranges. These summaries include the baseline sorties which were predicted in *Naval Air Warfare Center Weapons Division Operational Requirements Document* (U.S. Navy 2011). The estimated baseline sorties for each aircraft were then defined by prorating the 2004 EIS range aircraft distribution. The estimated baseline aircraft sorties were then multiplied by the average unit flight hours to estimate the total flight hours occurring within each of three ranges for each aircraft.

Under the Proposed Action, it was assumed that the baseline range aircraft operations would be increased for flight operations by up to 25 percent in North and Echo Ranges and 5 percent in Superior Valley Range.

The annual emissions estimated are summarized in Table G-2 and the data used for estimating aircraft emissions resulting from flight operations occurring within North, Echo, and Superior Ranges are presented in Attachment 2.

Table G-2 Aircraft Emissions in Range Area

Action	Annual Emissions (Tons per Year)						
	VOC[2]	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**[3]
Baseline Condition	0.9	8.8	6.0	0.6	6.8	6.8[1]	3,163.2
Proposed Action	0.6	10.3	5.9	0.6	6.4	6.4[1]	3,687.5

[1] Conservatively assumed to be the same as PM_{10}.
[2] VOC = HC * 1.15

[3] Metric tons.

3.3 MUNITIONS AND EXPLOSIVE DETONATION EMISSIONS

Criteria pollutants and GHGs emissions from both small arms (i.e., smaller than 20 mm gun) and large weapons (including bombs, projectiles, rockets, explosive detonations, and energetics) were estimated for ranges that are currently used for troop training or weapons testing and evaluations. These ranges include Charlie, Baker, Wingate, Superior Valley, APL, Coso, Darwin Wash, and George. The munitions and explosive detonation emissions factors used are primarily based on USEPA AP-42 provided emissions factors. The 29 Palms LAS DEIS (U.S. Marine Corps 2011) and SOCAL Range EIS (U.S. Navy 2008) were also used as emission factor resource documents in addition to AP-42.

Under the Proposed Action, it was assumed that the baseline munitions operations would be increased by up to 25 percent.

The annual emissions estimated are summarized in Table G-3 and the data used for estimating munitions and explosive detonation emissions for both North and South Ranges is presented in Attachment 3.

Table G-3 Ordnance Emissions

Action	Annual Emissions (Tons per Year)						
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	CO_2[1]
Baseline Condition	--	0.3	2.7	0.0	4.8	0.1	286.7
Proposed Action	--	0.4	3.4	0.1	6.0	0.2	358.5

[1] Metric tons.

3.4 VEHICLE EMISSIONS AND UNPAVED ROAD FUGITIVE DUST FROM RANGE TRAINING AND WEAPON TESTING

Range vehicle operational emissions occurring during troop training and weapons tests and evaluation activities were estimated for both vehicle exhaust emissions and fugitive dust on unpaved roadways within range areas. Based on a Geographic Information System (GIS) data review, the North Range has a total of approximately 660 miles of unpaved roadways (360 miles within Inyo County, 200 miles within Kern County, and 100 miles within San Bernardino County) and the South Range has a total of approximately 150 miles of unpaved roadways. In the 2010 Title V Permit Fee Inventory, it is assumed that the daily VMT would be equivalent to one vehicle travelling over the entire length of unpaved roadways, for every 234 days the range is operational, on an annual basis. Therefore, a 189,540 [(660+150) x 234] annual VMT was used for both exhaust and fugitive dust emissions estimates. It was also assumed that 80 percent of the light duty trucks modeled use gasoline while 20 percent are fueled by diesel. EMFAC2007-predicted emission factors as well as AP-42 unpaved roadway dust emission factors were multiplied by the annual VMT to estimate both vehicle exhaust emissions as well fugitive dust.

Under the Proposed Action, it was assumed that the baseline vehicle emissions and unpaved road fugitive dust would be directly proportional to the tempo increase and would be increased by up to 25 percent.

The annual emissions estimated are summarized in Table G-4 and the data used for estimating vehicle operational emissions during troop training and weapons testing is presented in Attachment 4.

Table G-4 Vehicle Exhaust Emissions and Fugitive Dust

Action	Annual Emissions (Tons per Year)						
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	CO_2[1]
Baseline Condition	0.0	0.1	0.6	0.0	64.9	6.5	93.4
Proposed Action	0.0	0.1	0.8	0.0	81.1	8.1	116.8

[1] Metric tons.

3.5 OTHER STATIONARY SOURCE EMISSIONS

The available 2010 NAWSCL permitted stationary source emissions inventory is summarized based on the reported annual actual emissions obtained from:

- Title V fee inventory for the sources operated in Inyo County within the Great Basin Valleys Air Basin; and
- HARP database for the sources operated in Kern County within the EKAPCD and in San Bernardino County within the MDAQMD.

The reported actual emissions were calculated based on the fuel amount consumed by permitted stationary combustion sources including boilers, generators (including those mobile units used for range training operations), tanks, etc. and applicable emission factors. The 2010 emissions levels are considered to be the same as the baseline condition and the future tempo increase is anticipated to result in an increase in the stationary source operational capacity by the same 25 percent. The annual emissions estimated are summarized in Table G-5 and the data used for estimating stationary source emissions is presented in Attachment 5.

Table G-5 Other Stationary Source Emissions

Action	Annual Emissions (Tons per Year)						
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	CO_2[2]
Baseline Condition	16.1	44.4	31.7	0.7	10.3	10.3[1]	1,997.4
Proposed Action	20.0	55.5	39.7	0.8	12.9	12.9[1]	2,496.8

[1] Conservatively assumed to be the same as PM_{10}.
[2] Metric tons.

4. CAA General Conformity Applicability Analysis

The 1990 amendments to the CAA require federal agencies to ensure that their actions conform to the State Implementation Plan (SIP) in federal nonattainment areas. The SIP is a plan that provides for implementation, maintenance, and enforcement of the National Ambient Air Quality Standards (NAAQS) and it includes emission limitations and control measures to attain and maintain the NAAQS. Conformity to a SIP, as defined in the CAA, means conformity to a SIP's purpose of reducing the severity and number of violations of the NAAQS to achieve attainment of such standards. The federal agency responsible for an action is required to determine whether its action conforms to the applicable SIP.

The USEPA has developed two sets of conformity regulations—for transportation projects and non-transportation-related projects, respectively:

- Transportation projects developed or approved under the Federal Aid Highway Program or Federal Transit Act are governed by transportation conformity regulations (40 CFR Parts 51 and 93), which became effective December 27, 1993 and were revised August 15, 1997.

- Non-transportation projects are governed by general conformity regulations (40 CFR Parts 6, 51, and 93), described in the final rule for *Determining Conformity of General Federal Actions to State or Federal Implementation Plans,* published in the *Federal Register* on November 30, 1993. The General Conformity Rule (GCR) became effective January 31, 1994 and was revised on March 24, 2010.

The Proposed Action is a non-transportation project and would potentially involve activities in the Indian Wells Valley and Coso Junction particulate matter equal to or less than 10 microns in diameter (PM_{10}) attainment/maintenance area, Trona PM_{10} moderate nonattainment area, and Owens Valley PM_{10} serious nonattainment area where NAWSCL is located. The GCR applies to the proposed activities within the nonattainment/and maintenance areas. Therefore, a subsequent general conformity applicability analysis is required.

4.1 GENERAL CONFORMITY RULE

The GCR applies to federal actions occurring in an area designated as nonattainment for the NAAQS or in attainment areas subject to maintenance plans (attainment/maintenance areas). Federal actions occurring in an area designated as attainment (no maintenance plan) with the NAAQS are not subject to the GCR.

A criteria pollutant is a pollutant for which a NAAQS has been established under the CAA. The designation of nonattainment is based on the exceedances or violations of the air quality standard. A maintenance plan establishes measures to control emissions to ensure the air quality standard is maintained in areas that have been redesignated as attainment/maintenance from a previous nonattainment status.

Areas that meet the NAAQS standard for a criteria pollutant are designated as being in "attainment;" areas where the criteria pollutant level exceeds the NAAQS are designated as being in "nonattainment." Ozone nonattainment areas are subcategorized based on the severity of their pollution problem (marginal, moderate, serious, severe, and extreme). Particulate Matter (PM) and CO nonattainment areas are classified into two categories (moderate and serious). When insufficient data exists to determine an area's attainment status, it is designated unclassifiable (or attainment).

Components of the Proposed Action would occur at various locations on NAWSCL. The areas on NAWSCLwhere the actions are proposed are currently designated as federal attainment areas for NAAQS for all criteria pollutants, except for PM_{10}. There are five planning areas on NAWSCL that are designated as either nonattainment or attainment/maintenance areas for PM_{10}, as follows (see Figure G-1, Federal PM_{10} Nonattainment and Attainment/Maintenance Areas at NAWSCL):

- Indian Wells Valley Planning Area (Attainment/Maintenance): Southwest portion of the North Range including Armitage Airfield.
- Coso Junction Planning Area (Attainment/Maintenance): Majority of North Range.
- Owens Valley Planning Area (Serious Nonattainment): Northwest portion of North Range.
- Trona Planning Area (Moderate Nonattainment): Western portion of NAWSCL South Range and the southeast portion of North Range.
- San Bernardino County (Moderate Nonattainment): Eastern Portion of NAWSCL South Range.

As shown on Figure G-1, the northeast portion of the North Range is in attainment for $PM_{10,}$ as well as for all of the other criteria pollutants.

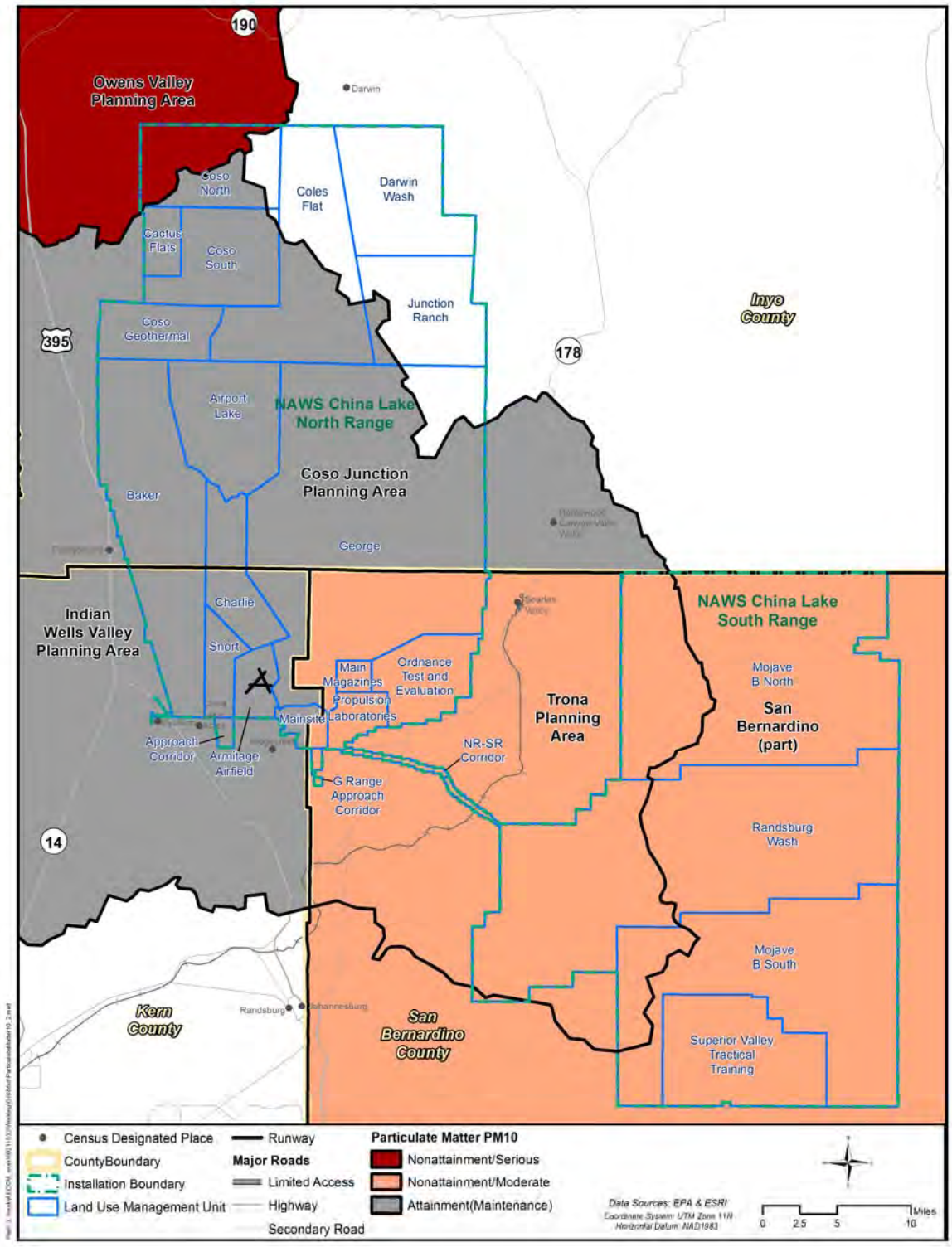


Figure G-1 Federal PM_{10} Nonattainment and Attainment/Maintenance Areas at NAWSCL

To focus general conformity requirements on those federal actions with the potential to have significant air quality impacts, threshold (*de minimis*) rates of emissions were established in the GCR. A formal conformity determination is required when the annual net total of direct and indirect emissions from a federal action occurring in a nonattainment or maintenance area for a criteria pollutant equals or exceeds the *de minimis* level for this pollutant. Table G-6 lists the *de minimis* level for criteria pollutants.

Table G-6 De Minimis Levels for All Criteria Pollutants

Pollutant	Nonattainment Designation	Tons/Year (TPY)
Ozone*	Serious	50
	Severe	25
	Extreme	10
	Other nonattainment or attainment/maintenance areas outside ozone transport region	100
	Marginal and moderate nonattainment areas inside ozone transport region	50/100**
Carbon Monoxide	All	100
Sulfur Dioxide	All	100
Lead	All	25
Nitrogen Dioxide	All	100
Particulate Matter ≤ 10 microns	Moderate	100
	Serious	70
Particulate Matter ≤ 2.5 microns***	All	100

Notes: *Applies to ozone precursors – volatile organic compounds (VOCs) and nitrogen oxides (NO_X).
** $VOCs/NO_X$
*** Applies to $PM_{2.5}$ and its precursors.

Under the GCR, the total emissions resulting from the proposed federal action must be compared to applicable *de minimis* levels on an annual basis. As defined by the GCR, if the emissions of a criteria pollutant (or its precursors) do not exceed the *de minimis* level, the federal action has minimal air quality impact and the action is determined to be in conformity for the pollutant under study. Therefore, no further analysis is necessary. Conversely, if the total direct and indirect emissions of a pollutant are above the *de minimis* level, a formal general conformity determination is required for that pollutant.

For PM_{10} nonattainment and attainment/maintenance areas, USEPA's conformity rules establish *de minimis* emission levels for PM_{10}. From Table G-6, the *de minimis* level of 100 tons per year (TPY) would apply to PM_{10} in the Indian Wells Valley, Trona, and Coso Junction Planning Areas. The *de minimis* level of 70 TPY would apply to PM_{10} in the Owens Valley Planning Area.

4.2 APPLICABILITY ANALYSIS

The applicability analysis was performed for the Proposed Action (with approximately 25 percent of tempo increase in range operations at NAWSCL), to determine whether the Proposed Action would be consistent with the GCR and whether a formal conformity analysis would be required. Pursuant to the GCR, reasonably foreseeable emissions (both direct and indirect) associated with the implementation of the Proposed Action within the nonattainment or attainment/maintenance areas at

NAWSCL were quantified and compared to the applicable annual *de minimis* levels to determine potential air quality impacts.

The conformity analysis for a federal action examines the impacts of the direct and indirect net emissions from mobile and stationary sources. Direct emissions are emissions of a criteria pollutant or its precursors that are caused or initiated by a federal action and occur at the same time and place as the action. Indirect emissions, occurring later in time and/or further removed in distance from the action itself, must be included in the determination if both of the following apply:

- The federal agency can practicably control the emissions and has continuing program responsibility to maintain control.

- The emissions caused by the federal action are reasonably foreseeable.

The following project components under the Proposed Action were identified with the potential to occur within the five PM_{10} nonattainment and attainment/maintenance planning areas. The emissions from these components were conservatively estimated for purposes of the GCR applicability analysis.

Indian Wells Valley and Coso Junction Planning Areas (PM_{10} Attainment/Maintenenace)

- Armitage Airfield aircraft arrivals and departures and touch-and-go pattern operations;
- Operations within North Range (excluding half of Coso North Range and the portion of North Range within San Bernardino County) including:
  - Aircraft training
  - Munitions and weapons testing
  - Test and training vehicles
  - Stationary combustion sources

Trona and San Bernardino County Planning Areas (PM_{10} Nonattainment-Moderate)

- Operations within South Range and portion of the North Range within San Bernardino County including:
  - Aircraft flight training
  - Munitions and weapons testing
  - Test and training vehicles
  - Stationary combustion sources

Owens Valley Planning Area (PM_{10} Nonattainment-Serious)

- Operations within half of Coso North Range within North Range including:
  - Munitions and weapons testing
  - Test and training vehicles
  - Stationary combustion sources

The emissions from the above activities are discussed and estimated above in Chapter 3 of this Appendix. Since there is no clear boundary to locate individual source components within the above five separate planning areas, particularly for mobile sources such as aircraft or vehicles, the total PM_{10} annual emissions within NAWSCL were conservatively used for GCR applicability comparison purposes.

4.3 APPLICABILITY DETERMINATION

The net increase in PM_{10} emissions with potential to emit from the Proposed Action within the five PM_{10} nonattainment and attainment/maintenance areas was predicted and summarized in Table G-7. As shown in Table G-7, the total combined operational emissions over the baseline condition are still below the applicable *de minimis* level of 100 TPY or 70 TPY PM_{10} emissions in each nonattainment or attainment/maintenance area on an annual basis. It is anticipated that the PM_{10} emissions within each of the five planning areas would be well below the applicable planning area specific *de minimis* level. Therefore, no formal conformity determination is required and no significant PM_{10} air quality impact would result from the implementation of the Proposed Action.

Table G-7 Total Annual Net Increase in PM_{10} Emissions for the Proposed Action

Operational Activity	PM_{10} Increment under Proposed Action (tpy)
Armitage Airfield Aircraft	13.3
Range Flight	-0.4
Munitions	1.2
Vehicle on Unpaved Roads	16.2
Other Stationary Sourecs	2.6
Total	**32.9**
Applicable de minimis levels	**70/100**

5. REFERENCES

Council on Environmental Quality (CEQ) 2010. Memorandum for Heads of Federal Departments and Agencies from: Nancy H. Sutley, Chair, Council on Environmental Quality Subject: *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas* February 18.

U.S. Air Force 2005. *U.S. Air Force Air Conformity Applicability Model (Version 4.3)*, December.

U.S. Air Force 2009. *Environmental Assessment/Overseas Environmental Assessment for the F-35 Joint Strike Fighter Initial Operational Test and Evaluation*, September.

U.S. Environmental Protection Agency (USEPA). September, 1985, revised January, 1995 and 2006. *Compilation of Air Pollutant Emission Factors, Fifth Edition, AP-42.*

USEPA 1992. *Procedures of Emission Inventory Preparation, Volume IV: Mobile Sources*, December.

USEPA 1993a. 40 CFR Parts 51 and 93. *Air Quality: Transportation Plans, Programs, and Projects; Federal or State Implementation Plan Conformity; Rule*, November 24.

USEPA 1993b. 40 CFR Parts 6, 51, and 93. *Determining Conformity of Federal Actions to State or Federal Implementation Plans, Federal Register*, November 30.

USEPA 2002. *User's Guide to MOBILE 6.2, Mobile Source Emission Factor Model*, October.

USEPA 2006. 40 CFR Parts 51 and 93. *PM2.5 De Minimis Emission Levels for General Conformity Applicability, Federal Register*, July 17.

USEPA 2009. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2007*. USEPA, Washington, DC, April 15.

U.S. Marine Corps 2011. *Draft Environmental Impact Statement Land Acquisition and Airspace Establishment to Support Large-Scale Marine Air Ground Task Force Live Fire and Maneuver Training*, February.

U.S. Navy. 2004. *Final Environmental Impact Statement for Proposed Military Operational Increases and Implementation of Associated Comprehensive Land Use and Integrated Natural Resources Management Plans, Volume I*. Prepared by Naval Air Weapons Station China Lake and the Bureau of Land Management. February.

U.S. Navy 2008. *Southern California Range Complex Environmental Impact Statement/Overseas Environmental Impact Statement*, December.

U.S. Navy 2011a. *Final Aircraft Noise Study for Naval Air Weapons Station China Lake, California*. April.

U.S. Navy 2011b. *Naval Air Warfare Center Weapons Division Operational Requirements Document*, October.

U.S. Navy. 2011c. *NAVAIR Range Complex Management Plan*. NAVAIR Ranges Sustainability Office, Point Mugu, California. October.

U.S. Navy 2014. *Final Environmental Impact Statement U.S. Navy F-35C West Coast Homebasing* May.

Wyle 2010. *Aircraft Noise Study for Naval Air Weapons Station China Lake*, April.

Attachment 1
Armitage Airfield Aircraft Emissions Analysis Support Data

Baseline and Proposed Aircraft Scenario

Table 1
Baseline and Proposed Aircraft Scenario
Helicopters Annual Flight Operation Derived from Available Fleet Mix Profile

VM/OM Helicopter Type	Total Flight Operations [1]	Helicopter Mix Profile (%)	Prorated Baseline Annual Flight Operations[3]	Prorated Proposed Annual Flight Operations[4]
AH-1	167	19%	417	521
H-1	519	58%	1296	1620
CH-46	50	6%	125	156
H-60	95	11%	237	296
HH-60	36	4%	90	112
MH-60	21	2%	52	66
Total	888	100%	2217	2771

Notes:
[1] Quantity of Flights are taken from Table 3 of NAVAIR Range Complex Management Plan to estimate Annual Flight Operation for different types of helicopters.
[2] % of Total Flight Operation calculated based on NAVAIR Range Complex Management Plan Table 3.
[3] The baseline annual flight operation values are calculated from the total annual flight operations of 2217 (total of VM and OM helicopters, ref: Wyle's noise study report Table 4-1) times the % of total flight operation in column 3 of this table.
[4] 25% increase in the flight operation for proposed scenario.

Table 2
Baseline and Proposed Aircraft Scenario
Other Military Aircraft Flight Operation Derived from Available Aircraft Mix Profile

OM Aircraft Type	Total Flight Operations [1]	OM Air Flight Mix Profile (%)	Prorated Baseline Annual Flight Operations[3]	Prorated Proposed Annual Flight Operations[4]	Prorated Baseline Annual Flight T&G Operations	Prorated Proposed Annual Flight T&G Operations
A-10	192	15%	89	111	7	9
F-14A and F-14 B/D	64	5%	30	37	2	3
F-16	324	26%	150	187	13	16
AV-8B	63	5%	29	36	2	3
T-39**	91	7%	42	53	4	4
C-130J and KC-130F/R/T	213	17%	98	123	8	10
E-2	54	4%	25	31	2	3
UAV	265	21%	122	153	10	13
Total	1266	100%	585	731	49	61

Notes:
[1] Quantity of Flights are taken from Table 3 of NAVAIR Range Complex Management Plan to estimate Annual Flight Operation for different types of OM aircrafts.
[2] % of Total Flight Operation calculated based on NAVAIR Range Complex Management Plan Table 3.
[3] Total annual flight operations excluding the T&G operations are 354+280-49=585 (total of VM and OM helicopters, ref: Wyle's noise study report Table 4-1).
[4] 25% increase in the flight operation for proposed scenario.
UAVs will be modeled as RQ 4.

**Ref: Wyle's noise study report Table 4-1, T-39 will be modeled as F16, as emission factors for T-39 is not available.
Total Flight operation for F-14A and F-14B/D going to distributed equally to calculate emission.
Total flight operation for C-130 J and KC-130F/R/T are distributed equally to calculate emission.

Table 3
Baseline and Proposed Aircraft Scenario
Navy and Marine Aircraft Flight Operations

VM Type	Total Baseline Operations[1]	Baseline Annual Flight Operation[1,2]	Baseline Annual Flight T&G Operations[1,3]	Baseline Annual Flight Break at Arrival[1,4]	Proposed Annual Flight Operations[1,5]	Proposed Annual Flight T&G Operations[3,5]	Proposed Annual Flight Break at Arrival[4,5]
F/A-18E/F	11366	6232	1187	3947	7790	1484	4934
F/A-18C/D	4240	2567	465	1208	1359	254	496
AV-8	1884	1072	238	574	616	131	247
EA-6B*	366	194	37	135	243	46	169
F-35C					2575	494	1483

Notes:
[1] Ref: Wyle's noise study report Table 4-1, total quantity of aircraft type.
[2] Total of departure, straight in NonTACAN arrival and TACAN arrival operations.
[3] Total touch and go operations, each touch and go is counted as one operation.
[4] Total of overhead break arrival and carrier break arrival operations.
[5] 25% increase in the flight operation for proposed scenario.
* EA-6B will be replaced by EA-18G for proposed condition and modeled as F/A-18E/F.
The Annual Flight Operation includes all departures and straight in arrivals in TACAN or Non TACAN arrival, each counted as one operation.

Table 4
Baseline and Proposed Aircraft Scenario
General Aviation and Air Carrier Aircraft Flight Operation

GA/AC Type	Baseline Annual Flight Operations[1]	Proposed Annual Flight Operations[2]
GA	247	309
AC	50	63

Notes:
[1]Ref: Wyle's noise study report Table 4-1, total quantity of aircraft type.
GA includes, GA propeller, GA Helicopter/Rotary, GA, Jet, all GA will be modeled as LJ35.
AC covers, B707 and DC9 aircrafts, all AC will be modeled as DC9.
Annual Flight Operation combines departure and straight in arrival, counting each as an individual flight operation.
[2] 25% increased in the flight operation for proposed scenario.

Aircraft Forecasts from *Aircraft Noise Study for Naval Air Weapons Station China Lake*

Table 5
Wyle's Noise Operations Table 4-1
Aircraft Mix and Annual Flight Operations at NAWS China Lake

Aircraft Type	% of Total Flight Operations [1]	Grouping	% Within Grouping	Annual Flight Operations
F/A-18E/F	**54.0%**	VM	58.0%	**11,367**
F/A-18A-D	**20.2%**		21.7%	**4,242**
AV-8	**8.9%**		9.6%	**1,883**
EA-6B	**1.7%**		1.9%	**365**
VM Helicopter/Rotary	8.2%		8.8%	1,715
OM Jet	**1.7%**	OM	30.2%	**354**
OM Helicopter/Rotary	2.4%		42.8%	502
OM Propeller	1.3%		23.9%	280
UAV	0.2%		3.1%	36
GA Propeller	0.6%	GA	52.6%	130
GA Helicopter/Rotary	0.4%		34.4%	85
GA Jet	0.2%		13.0%	32
SW-4	0.2%	AC	98.0%	49
AC Jet	0.0%		2.0%	1
VC35	<1%			-
Subtotals	93.0%	VM		19,572
	5.6%	OM		1,172
	1.2%	GA		247
	0.2%	AC		50
	<1%	Unknown		-
Grand Total	100.0%			21,041
Total Not Modeled	13.5%			2,830
Total Modeled	86.5%			18,211

[1] per NAWSCL ATC logs for CY2007 scaled to match 15-year averages from ATARs

OM = Other Military
VM = Navy/Marine
GA = General Aviation
Helo = Helicopter
UAV = Unmanned Aerial Vehicle
AC = Air Carrier
OM Jet consists of F-16, T-39, T-38, etc; primarily F-16
AC Jet consists of B707 and DC9 aircraft
GA Jet consists of LJ60, LJ35, FA50, etc.
Bold = modeled Aircraft

Table 6
Wyle's Noise Operations Table 4-2
Modeled Annual Flight Operations for Baseline Scenario

Aircraft Grouping	Departure				Straight In NonTACAN Arrival				TACAN Arrival			
	Day	Evening	Night	Total	Day	Evening	Night	Total	Day	Evening	Night	Total
F/A-18E/F	4,581	407	102	5,090	934	83	21	1,038	94	8	2	104
F/A-18C/D	1,699	151	38	1,888	286	25	6	317	326	29	7	362
AV-8	758	41	25	824	41	2	1	44	188	10	6	204
EA-6B	145	16	3	164	13	1	-	14	14	2	-	16
E/A-18G	-	-	-	-	-	-	-	-	-	-	-	-
F-35C[1]	-	-	-	-	-	-	-	-	-	-	-	-
OM Jet[2]	141	8	5	154	34	2	1	37	38	2	1	41
TOTAL	7,324	623	173	8,120	1,308	113	29	1,450	660	51	16	727

Aircraft Grouping	Overhead Break Arrival				Carrier Break Arrival				Touch and Go[3]			
	Day	Evening	Night	Total	Day	Evening	Night	Total	Day	Evening	Night	Total
F/A-18E/F	2,124	189	47	2,360	1,428	127	32	1,587	1,068	95	24	1,187
F/A-18C/D	648	58	14	720	439	39	10	488	419	37	9	465
AV-8	394	21	13	428	135	7	4	146	219	12	7	238
EA-6B	71	8	2	81	48	5	1	54	32	4	1	37
E/A-18G	-	-	-	-	-	-	-	-	-	-	-	-
F-35C[1]	-	-	-	-	-	-	-	-	-	-	-	-
OM Jet[2]	45	2	1	48	23	1	1	25	46	2	1	49
TOTAL	3,282	278	77	3,637	2,073	179	48	2,300	1,784	150	42	1,976

Aircraft Grouping	Total			
	Day	Evening	Night	Total
F/A-18E/F	10,229	909	228	11,366
F/A-18C/D	3,817	339	84	4,240
AV-8	1,735	93	56	1,884
EA-6B	323	36	7	366
E/A-18G	-	-	-	-
F-35C[1]	-	-	-	-
OM Jet[2]	327	17	10	354
TOTAL	16,431	1,394	385	18,210

22762.5

Notes: Day = 0700-1900; Evening = 1900-2200; Night = 2200-0700

[1]not modeled for the Baseline Scenario

[2]OM Jet primarily includes F-16, t-39 and t-38 and was modeled with the AV-8B as a surrogate

[3] Each "Touch and Go" is counted as one operation.

Table 7
Wyle's Noise Operation Table 5-1
Annual Flight Operations for Proposed Scenario

Aircraft Grouping	Departure				Straight In NonTACAN Arrival				TACAN Arrival			
	Day	Evening	Night	Total	Day	Evening	Night	Total	Day	Evening	Night	Total
F/A-18E/F	5,726	508	128	6,362	1,167	104	26	1,297	118	10	3	131
F/A-18C/D	858	65	21	944	72	5	1	78	303	27	7	337
AV-8	382	17	14	413	10	0	0	11	177	9	6	192
EA-6B	-	-	-	-	-	-	-	-	-	-	-	-
E/A-18G	181	20	4	205	16	1	-	17	18	3	-	21
F-35C	1,831	157	43	2,031	327	28	7	362	165	13	4	182
OM Jet[1]	176	10	6	192	43	3	1	47	48	3	1	52
TOTAL	9,154	777	216	10,147	1,635	141	35	1,812	829	65	21	915

Aircraft Grouping	Overhead Break Arrival				Carrier Break Arrival				Touch and Go[3]			
	Day	Evening	Night	Total	Day	Evening	Night	Total	Day	Evening	Night	Total
F/A-18E/F	2,655	236	59	2,950	1,785	159	40	1,984	1,335	119	30	1,484
F/A-18C/D	300	21	8	329	152	11	4	167	231	18	5	254
AV-8	182	8	6	196	47	2	2	51	121	6	4	131
EA-6B	-	-	-	-	-	-	-	-	-	-	-	-
E/A-18G	89	10	3	102	60	6	1	67	40	5	1	46
F-35C	820	69	19	908	518	45	12	575	446	37	11	494
OM Jet[1]	56	3	1	60	29	1	1	31	58	2	-	60
TOTAL	4,102	347	96	4,545	2,591	224	60	2,875	2,231	187	51	2,469

Aircraft Grouping	Total			
	Day	Evening	Night	Total
F/A-18E/F	12,786	1,136	286	14,208
F/A-18C/D	1,916	147	46	2,109
AV-8	919	42	32	994
EA-6B	-	-	-	-
E/A-18G	404	45	9	458
F-35C	4,107	349	96	4,552
OM Jet[1]	410	22	10	442
TOTAL	20,542	1,741	479	22,763

Notes: Day = 0700-1900; Evening = 1900-2200; Night = 2200-0700

[1]OM Jet primarily includes F-16, t-39 and t-38 and was modeled with the AV-8B as a surrogate

[3] Each "Touch and Go" is counted as one operation.

Baseline Aircraft Emissions

Table - y
Aircraft
Baseline Emissions - AV8

Emission AV8
Engine F402-RR-406A

Pollutant	Single Departure Operation Emissions				Single Arrival Operation Emission									
	Conventional Takeoff (Lbs/takeoff)	Short takeoff (Lbs/takeoff)	Vertical Takeoff (Lbs/takeoff)	**Single Departure (Lbs/Op.)**	Conventional Landing With a Straight In Approach (Lbs/ landing)	Conventional Landing With a Break Approach (Lbs/ landing)	Slow Landing With a Straight In Approach (Lbs/ landing)	Slow Landing With a Break Approach (Lbs/ landing)	Rolling Vertical Landing With a Straight In Approach (Lbs/ landing)	Rolling Vertical Landing With a Break Approach (Lbs/ landing)	Vertical Landing With a Straight In Approach (Lbs/ landing)	Vertical Landing With a Break Approach (Lbs/ landing)	**Single Straight in Arrival (Lbs/ Op.)**	**Single Break Arrival (Lbs/ Op.)**
NO_X	2.04	2.32	4.6	**4.6**	3.34	2.36	4.35	3.37	6.26	5.28	7.57	6.59	**7.57**	**6.59**
HC	5.72	5.72	5.73	**5.73**	8.18	8.31	8.21	8.34	8.24	8.37	8.24	8.37	**8.24**	**8.37**
CO	32.24	32.2	32.21	**32.24**	46.85	47.08	47.11	47.34	47.2	47.43	46.93	47.16	**47.2**	**47.43**
SO_2	0.19	0.19	0.23	**0.23**	0.3	0.26	0.34	0.3	0.39	0.35	0.41	0.37	**0.41**	**0.37**
PM_{10}	3.82	3.82	3.9	**3.9**	5.94	5.64	6.28	5.98	6.48	6.18	6.48	6.18	**6.48**	**6.18**
CO_2	1,390.50	1,428.00	1,731.10	**1731.1**	2,231.80	1,909.40	2,571.30	2,248.80	2,949.40	2,626.90	3,115.90	2,793.40	**3115.9**	**2793.4**

Pollutant	Sortie Emission								Maintenance Emissions			Total AV8, AV-8B Emissions	
	# of LTO Straight in Arrival (LTOs/Yr)	LTO Straight in Arrival Emission (Lb/Yr)	# of LTO Break Arrival (LTOs/Yr)	LTO Break Arrival Emissions (Lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	248	3018.16	574	6423.06	9.13	238	2172.94	11614.16	6	109.11	654.66	12268.82	6.13441
HC	248	3464.56	574	8093.4	0.36	238	85.68	11643.64	6	252.27	1513.62	13157.26	6.57863
CO	248	19701.12	574	45730.58	4.47	238	1063.86	66495.56	6	1430.02	8580.12	75075.68	37.53784
SO_2	248	158.72	574	344.4	0.34	238	80.92	584.04	6	9.16	54.96	639	0.3195
PM_{10}	248	2574.24	574	5785.92	2.67	238	635.46	8995.62	6	179.57	1077.42	10073.04	5.03652
CO_2	248	1202056	574	2597063	2,669.10	238	635245.8	4434364.8	6	69,195.00	415170	4849534.8	2424.7674

Notes
1. Emission Factors for day attack were used.
2. Emission Factors are obtained from the Aircraft Environmental Support Office memo reports 9913D and 9963C.
3. Specific types of takeoffs and landings most used by the Harrier at China Lake are not known. Highest emission factors selected to account for all types of takeoffs and landings.

Table - ϕ
Aircraft
Baseline Emissions - F/A-18E/F

Emission F/A-18E/F
Engine F414-GE-400

	Sortie Emission										**Maintenance Emissions**			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in Arrival (Lb/LTO)	# of LTO Straight in Arrival (LTO/Yr)	Straight in Arrival Emissions (Lbs/Yr)	LTO Emission Rate Break Arrival (Lb/LTO)	# of LTO Break Arrival (LTOs/Yr)	Break Arrival Emissions (Lbs/Yr)	T&G Emissions Rate (Lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	31.08	1142	35493.36	31.15	3947	122949.05	14.47	1187	17175.89	175618.3	24	814.18	19540.32	195158.62	97.57931
HC	69.7	1142	79597.4	70.27	3947	277355.69	0.08	1187	94.96	357048.05	24	2,155.43	51730.32	408778.37	204.389185
CO	265.3	1142	302972.6	266.46	3947	1051717.62	0.5	1187	593.5	1355283.72	24	10,917.02	262008.48	1617292.2	808.6461
SO_2	1.04	1142	1187.68	1.01	3947	3986.47	0.28	1187	332.36	5506.51	24	31.23	749.52	6256.03	3.128015
PM_{10}	18.21	1142	20795.82	17.54	3947	69230.38	3.95	1187	4688.65	94714.85	24	488.03	11712.72	106427.57	53.213785
CO_2	7,823.99	1142	8934996.58	7,553.13	3947	29812204.1	2,249.53	1187	2670192.11	41417392.8	24	228,716.14	5489187.36	46906580.2	23453.2901

Note:

1. Emission factors are obtained from AESO Report No. 9815, Revision G, March 2011 and 9933, Revision D, March 2011.

Table - мл
Aircraft
Baseline Emissions - F/A-18A-D

Emission F/A-18A-D
Engine F404-GE-400

	Sortie Emission										**Maintenance Emissions**			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	# of LTO Straight in Arrival (LTO/Yr)	Straight in Arrival Emissions (Lbs/Yr)	LTO Emission Rate Break arrival (Lb/LTO)	# of LTO Break Arrival (LTOs/Yr)	Break Arrival Emissions (Lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	13.09	679.00	8888.11	13.49	1208.00	16295.92	4.77	465.00	2218.05	27402.08	14.00	447.60	6266.40	33668.48	16.83
HC	53.74	679.00	36489.46	54.35	1208.00	65654.80	0.19	465.00	88.35	102232.61	14.00	1620.80	22691.20	124923.81	62.46
CO	139.40	679.00	94652.60	141.32	1208.00	170714.56	0.95	465.00	441.75	265808.91	14.00	4389.30	61450.20	327259.11	163.63
SO_2	0.82	679.00	556.78	0.82	1208.00	990.56	0.18	465.00	83.70	1631.04	14.00	25.60	358.40	1989.44	0.99
PM_{10}	16.17	679.00	10979.43	15.98	1208.00	19303.84	2.55	465.00	1185.75	31469.02	14.00	447.10	6259.40	37728.42	18.86
CO_2	6100.69	679.00	4142368.51	6034.31	1208.00	7289446.48	1454.15	465.00	676179.75	12107994.74	14.00	189634.40	2654881.60	14762876.34	7381.44

Note:

1. Emission factors are obtained from AESO Report No. 9815, Revision G, March 2011 and 9933, Revision D, March 2011.

Table - MM
Aircraft
Baseline Emissions - EA-6B

Emission EA-6/EA-6B
Engine J52-P-408A

	Sortie Emission										**Maintenance Emissions**			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	# of LTO Straight in Arrival (LTO/Yr)	Straight in Arrival Emissions (Lbs/Yr)	LTO Emission Rate Break arrival (Lb/LTO)	# of LTO Break Arrival (LTOs/Yr)	Break Arrival Emissions (Lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	11.5	30	345	11.41	135	1540.35	4.65	37	172.05	2057.4	1	349.8	349.8	2407.2	1.2036
HC	29.28	30	878.4	29.35	135	3962.25	0.5	37	18.5	4859.15	1	725.5	725.5	5584.65	2.792325
CO	61.4	30	1842	61.24	135	8267.4	2.95	37	109.15	10218.55	1	1,698.40	1698.4	11916.95	5.958475
SO_2	0.87	30	26.1	0.85	135	114.75	0.24	37	8.88	149.73	1	25.9	25.9	175.63	0.087815
PM_{10}	31.28	30	938.4	30.28	135	4087.8	5.83	37	215.71	5241.91	1	933.8	933.8	6175.71	3.087855
CO_2	6787.8	30	203634	6554.8	135	884898	1,906.33	37	70534.21	1159066.21	1	201,143.10	201143.1	1360209.31	680.104655

Note:

1. Emission factors are obtained from AESO Report No. 9917, Revision C, December 2009, and 9941B, Revision B, December 2009.

Table - MH
Aircraft
Baseline Emissions- F-14A

Emission F-14 A
Engine TF30-P-412A

	Sortie Emission								**Maintenance Emissions**			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	LTO Emission Rate Break arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	17.47	17.64	8	141.12	4.19	1	4.19	145.31	0	826.40	0	145.31	0.072655
HC	53.08	53.27	8	426.16	1.13	1	1.13	427.29	0	3,119.40	0	427.29	0.213645
CO	90.05	90.59	8	724.72	2.65	1	2.65	727.37	0	5,021.80	0	727.37	0.363685
SO_2	1.15	1.16	8	9.28	0.16	1	0.16	9.44	0	54.4	0	9.44	0.00472
PM_{10}	16.12	16.32	8	130.56	2.68	1	2.68	133.24	0	863.1	0	133.24	0.06662
CO_2	9651.04	9742.32	8	77938.56	1,337.30	1	1337.3	79275.86	0	459,338.90	0	79275.86	39.63793

Note:

1. Emission factors are obtained from AESO Report 9813, Revision H, November 2002, and No. 9945, Revision C, May 2010.

Table - MO
Aircraft
Baseline Emissions - F-14B/D

Emission F-14 B/D
Engine F110-GE-400

	Sortie Emission								Maintenance Emissions			Total Emissions	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	LTO Emission Rate Break arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	18.43	16.93	7	129.01	4.47	1	4.47	133.48	0	1,536.50	0	133.48	0.06674
HC	7.13	7.28	7	50.96	0.5	1	0.5	51.46	0	414.80	0	51.46	0.02573
CO	31.08	31.9	7	223.3	1.21	1	1.21	224.51	0	2,521.00	0	224.51	0.112255
SO_2	1.09	1.05	7	7.63	0.17	1	0.17	7.8	0	70.7	0	7.8	0.0039
PM_{10}	23.59	23.4	7	165.13	2.62	1	2.62	167.75	0	1,261.70	0	167.75	0.083875
CO_2	8,610.51	8,270.17	7	60273.57	1,369.90	1	1369.9	61643.47	0	556,620.70	0	61643.47	30.821735

Note:

1. Emission factors are obtained from AESO Report 9813, Revision H, November 2002, and No. 9945, Revision C, May 2010.

Table - MП
Aircraft
Baseline Emissions - Harrier

Emission Harrier modeled as AV8 AV-8B
Engine F402-RR-406A

Pollutant	Single Departure Operation Emissions				Single Arrival Operation Emission								
	Conventional Takeoff (Lbs/takeoff)	Short takeoff (Lbs/takeoff)	Vertical Takeoff (Lbs/takeoff)	**Single Departure (Lbs/Op.)**	Conventional Landing With a Straight In Approach (Lbs/ landing)	Conventional Landing With a Break Approach (Lbs/ landing)	Slow Landing With a Straight In Approach (Lbs/ landing)	Slow Landing With a Break Approach (Lbs/ landing)	Rolling Vertical Landing With a Straight In Approach (Lbs/ landing)	Rolling Vertical Landing With a Break Approach (Lbs/ landing)	Vertical Landing With a Straight In Approach (Lbs/ landing)	Vertical Landing With a Break Approach (Lbs/ landing)	**Single Arrival (Lbs/ Op.)**
NO_X	2.04	2.32	4.6	**4.6**	3.34	2.36	4.35	3.37	6.26	5.28	7.57	6.59	**7.57**
HC	5.72	5.72	5.73	**5.73**	8.18	8.31	8.21	8.34	8.24	8.37	8.24	8.37	**8.37**
CO	32.24	32.2	32.21	**32.24**	46.85	47.08	47.11	47.34	47.2	47.43	46.93	47.16	**47.43**
SO_2	0.19	0.19	0.23	**0.23**	0.3	0.26	0.34	0.3	0.39	0.35	0.41	0.37	**0.41**
PM_{10}	3.82	3.82	3.9	**3.9**	5.94	5.64	6.28	5.98	6.48	6.18	6.48	6.18	**6.48**
CO_2	1,390.50	1,428.00	1,731.10	**1731.1**	2,231.80	1,909.40	2,571.30	2,248.80	2,949.40	2,626.90	3,115.90	2,793.40	**3115.9**

Pollutant	Sortie Emission						Maintenance Emissions			Total AV8, AV-8B Emissions	
	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	15	182.55	9.13	2	18.26	200.81	6	109.11	654.66	855.47	0.427735
HC	15	211.5	0.36	2	0.72	212.22	6	252.27	1513.62	1725.84	0.86292
CO	15	1195.05	4.47	2	8.94	1203.99	6	1430.02	8580.12	9784.11	4.892055
SO_2	15	9.6	0.34	2	0.68	10.28	6	9.16	54.96	65.24	0.03262
PM_{10}	15	155.7	2.67	2	5.34	161.04	6	179.57	1077.42	1238.46	0.61923
CO_2	15	72705	2,669.10	2	5338.2	78043.2	6	69,195.00	415170	493213.2	246.6066

Note:

1. Emission factors are obtained from AESO Report No. 9913, Revision D, November 2009, and AESO Report No. 9963 Revision C, November 2009
2. Specific types of takeoffs and landings most used by the Harrier at China Lake are not known. Highest emission factors selected to account for all types of takeoffs and landings.

Table - MP
Aircraft
Baseline Emissions - C-130J

Emission C-130 J
Engine T56-A-16

	Sortie Emission								**Maintenance Emissions**			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	LTO Emission Rate Break arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	19.91	23.34	25	583.5	3.67	4	14.68	598.18	0		0	598.18	0.29909
HC	0.1	0.11	25	2.75	0.01	4	0.04	2.79	0		0	2.79	0.001395
CO	5.99	5.47	25	149.75	0.48	4	1.92	151.67	0		0	151.67	0.075835
SO_2	0.79	0.86	25	21.5	0.13	4	0.52	22.02	0		0	22.02	0.01101
PM_{10}	2.96	3.27	25	81.75	0.52	4	2.08	83.83	0		0	83.83	0.041915
CO_2	6,294.00	6,912.00	25	172800	1,063.30	4	4253.2	177053.2	0		0	177053.2	88.5266

Note:

1. Emission factors are obtained from AESO Report No. 2000-09, Revision B, January 2001, and No. 2000-10, Revision B, January 2001.

Table - MC
Aircraft
Baseline Emissions - KC-130F/R/T

Emission KC-130F/R/T
Engine T56-A-16

	Sortie Emission								Maintenance Emissions			Total Emissions	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	LTO Emission Rate Break arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	17.35	19.17	24	460.08	2.8	4	11.2	471.28	0		0	471.28	0.23564
HC	7.65	7.39	24	183.6	0.15	4	0.6	184.2	0		0	184.2	0.0921
CO	14.79	13.78	24	354.96	0.63	4	2.52	357.48	0		0	357.48	0.17874
SO_2	0.95	0.99	24	23.76	0.13	4	0.52	24.28	0		0	24.28	0.01214
PM_{10}	9.03	9.42	24	226.08	1.3	4	5.2	231.28	0		0	231.28	0.11564
CO_2	7,570.00	7,896.00	24	189504	1,051.30	4	4205.2	193709.2	0		0	193709.2	96.8546

Note:

1. Emission factors are obtained from AESO Report No. 2000-09, Revision B, January 2001, and No. 2000-10, Revision B, January 2001.

Table -1T
Aircraft
Baseline Emissions - E-2

Emission E-2
Engine T56-A-16

	Sortie Emission								**Maintenance Emissions**			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	LTO Emission Rate Break arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	6.61	7.92	12	95.04	2.85	2	5.7	100.74	0		0	100.74	0.05037
HC	9.37	9.39	12	112.68	0.11	2	0.22	112.9	0		0	112.9	0.05645
CO	13.91	13.96	12	167.52	0.5	2	1	168.52	0		0	168.52	0.08426
SO_2	0.41	0.46	12	5.52	0.13	2	0.26	5.78	0		0	5.78	0.00289
PM_{10}	4.11	4.61	12	55.32	1.26	2	2.52	57.84	0		0	57.84	0.02892
CO_2	-	-	-	-	-	-	-	-	-	-	-	-	-

Note:

1. Emission factors are obtained from AESO Report No. 9920, Revision B, April 2000, and Report No. 9943, Revision B, April 2000.
2. Data is not available for T56-A-16 engine, therefore, T56-A-425 or -427 engine emission data being used to calculate total emissions, Ref. AESO Report No. 9920, Revision B.

Table - 1y
Aircraft
Baseline Emissions - DC-9

Emissions for DC-9
Engine JT8D-9 or 9A

	Sortie Emission				**Maintenance Emissions**			**Total DC-9 Emissions**	
Pollutant	LTO Emission Rate (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	18.6	25	465	465		208.5	0	465	0.2325
HC	8.8	25	220	220		136.4	0	220	0.11
CO	33.3	25	832.5	832.5		496.9	0	832.5	0.41625
SO_2	1	25	25	25		12.2	0	25	0.0125
PM_{10}	33.1	25	827.5	827.5		413	0	827.5	0.41375
CO_2	7992	25	199800	199800		95963	0	199800	99.9

Note:

1. Emission factors are obtained from AESO Report No. 9926, Revision A, December 2009, and 9942A, Revision A, April 2000.

2. For T&G and GCA AESO 9942A April 2000 has been used as 9942B was not available at the time when the analysis began.

Table - 1ϕ
Aircraft
Baseline Emissions - H-1

Emission UH-1
Engine T400-CP-400

	Sortie Emission				**Maintenance Emissions**			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	1.28	648	829.44	829.44	2	20.86	41.72	871.16	0.43558
HC	0.67	648	434.16	434.16	2	21.74	43.48	477.64	0.23882
CO	3.32	648	2151.36	2151.36	2	99.86	199.72	2351.08	1.17554
SO_2	0.11	648	71.28	71.28	2	2.09	4.18	75.46	0.03773
PM_{10}	1.18	648	764.64	764.64	2	21.92	43.84	808.48	0.40424
CO_2	-	-	-	-	-	-	-	-	-

Note:
1. Emission factors are obtained from AESO Report No. 9904, Revision A, May 1999.

Table - нл
Aircraft
Baseline Emissions - AH-1

Emission AH-1
Engine T700-GE-401C

	Sortie Emission				**Maintenance Emissions**			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	2.09	208	434.72	434.72	2	15.88	31.76	466.48	0.23324
HC	0.33	208	68.64	68.64	2	4.23	8.46	77.1	0.03855
CO	7.08	208	1472.64	1472.64	2	76.33	152.66	1625.3	0.81265
SO_2	0.17	208	35.36	35.36	2	1.40	2.8	38.16	0.01908
PM_{10}	1.80	208	374.4	374.4	2	14.67	29.34	403.74	0.20187
CO_2	852.02	208	177220.16	177220.16	2	11,039.15	22078.3	199298.46	99.64923

Note:
1. Emission factors are obtained from AESO Report No. 9824, Revision B, November 2009.

Table - HM
Aircraft
Baseline Emissions - CH-46

Emission CH-46
Engine T58-GE-16

	Sortie Emission				**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	1.07	62	66.34	66.34	66.34	0.03317
HC	6.81	62	422.22	422.22	422.22	0.21111
CO	21.37	62	1324.94	1324.94	1324.94	0.66247
SO_2	0.15	62	9.3	9.3	9.3	0.00465
PM_{10}	1.36	62	84.32	84.32	84.32	0.04216
CO_2	1,130	62	70060	70060	70060	35.03

Note:
1. Emission factors are obtained from AESO Report No. 9816, Revision F, January 2001.

Table - HH
Aircraft
Baseline Emissions - H-60

Emission H-60
Engine T700-GE-401C

	Sortie Emission				**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	3.4	119	404.6	404.6	404.6	0.2023
HC	1.4	119	166.6	166.6	166.6	0.0833
CO	12.3	119	1463.7	1463.7	1463.7	0.73185
SO_2	0.3	119	35.70	35.70	35.70	0.01785
PM_{10}	2.3	119	273.7	273.7	273.7	0.13685
CO_2	3,000	119	357000	357000	357000	178.5

Note:
1. Emission factors are obtained from AESO Report No. 9929, Revision A, November 2009.

Table - HO
Aircraft
Baseline Emissions - HH-60

Emission HH-60
Engine T700-GE-401C

	Sortie Emission				**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	3.4	45	153	153	153	0.0765
HC	1.4	45	63	63	63	0.0315
CO	12.3	45	553.5	553.5	553.5	0.27675
SO_2	0.3	45	13.50	13.50	13.50	0.006750
PM_{10}	2.3	45	103.5	103.5	103.5	0.05175
CO_2	3,000	45	135000	135000	135000	67.5

Note:
1. Emission factors are obtained from AESO Report No. 9929, Revision A, November 2009.

Table - нп
Aircraft
Baseline Emissions - MH-60

Emission MH-60
Engine T700-GE-401C

	Sortie Emission				**Maintenance Emissions**			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	3.4	26	88.4	88.4	3	108.00	324	412.4	0.2062
HC	1.4	26	36.4	36.4	3	39.00	117	153.4	0.0767
CO	12.3	26	319.8	319.8	3	265.30	795.9	1115.7	0.55785
SO_2	0.3	26	7.80	7.80	3	7.3	21.9	29.70	0.01485
PM_{10}	2.3	26	59.8	59.8	3	63.30	189.9	249.7	0.12485
CO_2	3,000	26	78000	78000	3	58,280	174841.2	252841.2	126.4206

Note:
1. Emission factors are obtained from AESO Report No. 9929, Revision A, November 2009.

Table - Hp
Aircraft
Baseline Emissions - LJ-35

Emission LJ-35

Engine: TFE731-2-2B

	Sortie Emission														**Maintenance Emissions**			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	LTO Emission Rate Break arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	GCA Box Emission Rate (lbs/GCAs)	# of GCA Box (GCAs/Yr)	GCA Box Emission (lbs/Yr)	FCLP Emission Rate (lbs/FCLP)	# of FCLP (FCLPs/Yr)	FCLP Emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircraft	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	1.695		124	210.18			0			0			0	210.18	0	0.00	0	210.18	0.10509
HC	5.934		124	735.816			0			0			0	735.816	0	0.00	0	735.816	0.367908
CO	21.291		124	2640.084			0			0			0	2640.084	0	0.00	0	2640.084	1.320042
SO_2	0.345		124	42.78			0			0			0	42.78	0	0	0	42.78	0.02139
PM_{10}	0.124		124	15.376			0			0			0	15.376	0	0.00	0	15.376	0.007688
CO_2	-		-	-	-	-	-			-			-	-	-	-	-	-	-

Note:
1. GA modeled as LJ-35.
2. Emission factors are obtained from EDMS version 5.0.2.
3. Emission factors include ground support equipment.

Table - HC

Aircraft

Baseline Emissions - A10A/B, F-16C/D, UAVs

Aircraft	Engine	# LTO	# T&G	Total Emission Tons/Years				
				CO	NOX	SO2	VOC	PM10
A-10A/B	TF34-GE-100A	44	7	0.25	0.01	0.00	0.00	0.00
F-16C/D[3]	F110-GE-129	75	17	0.27	0.12	0.02	0.05	0.04
RQ-4A[4]	Allison AE3007	61	10	0.03	0.02	0.00	0.00	0.00

Note:

1. Emissions for aircrafts in this table have been estimated using US ACAM 4.5.0 Model for year 2011.
2. Emission factors include ground support equipment.
3. T-39 operations are modeled with F-16 operation.
4. UAVs operations are modeled as RQ-4A operation.

Table - 2T
Baseline Aircraft Emission

Aircraft Type	Engine	Grouping	Total Emission Tons/Years					
			CO	NOX	SO2	HC	PM10	CO2
AV-8	F402-RR-408	VM	37.54	6.13	0.32	6.58	5.04	2424.77
EA-6/EA6B	J52-P-408A		5.96	1.20	0.09	2.79	3.09	680.10
F-18EF	F414-GE-400		808.65	97.58	3.13	204.39	53.21	23453.29
F-18A-D	F404-GE-400		163.63	16.83	0.99	62.46	18.86	7381.44
F-14A	TF30-P-412A	OM	0.36	0.07	0.00	0.21	0.07	39.64
F-14B/D	F110-GE-400		0.11	0.07	0.00	0.03	0.08	30.82
Harrier	F402-RR-408		4.89	0.43	0.03	0.86	0.62	246.61
C-130J	T406-AD-400		0.08	0.30	0.01	0.00	0.04	88.53
KC-130R/F/T	T56-A-16		0.18	0.24	0.01	0.09	0.12	96.85
E-2	T56-A-16		0.08	0.05	0.00	0.06	0.03	
A-10A/B	TF34-GE-100A		0.25	0.01	0.00	0.00	0.00	
F-16C/D	F110-GE-129		0.27	0.12	0.02	0.05	0.04	
RQ-4A	Allison AE3007		0.03	0.02	0.00	0.00	0.00	
UH-1	T400-CP-400	Helo	1.18	0.44	0.04	0.24	0.40	
AH-1	T700-GE-401C		0.81	0.23	0.02	0.04	0.20	
CH-46	T58-GE-16		0.66	0.03	0.00	0.21	0.04	35.03
H-60	T700-GE-401C		0.73	0.20	0.02	0.08	0.14	178.50
HH-60	T700-GE-401C		0.28	0.08	0.01	0.03	0.05	67.50
MH-60	T700-GE-401C		0.56	0.21	0.01	0.08	0.12	126.42
DC9	JT8D-9 or 9A	AC	0.42	0.23	0.01	0.11	0.41	99.90
LJ 35	TFE731-2-2B	GA	1.32	0.11	0.02	0.37	0.01	
Total Emissions			1027.98	124.58	4.75	278.68	82.58	34949.40

Note:

1. Ref, Table 4-1 in Wyle's Noise Study Report
2. VM = Navy/Marine
3. OM = Other Military
4. Helo = Helicopter
5. AV = Air Carrier
6. GA = General Aviation

Proposed Aircraft Emissions

Table HY
Aircraft
Proposed Emissions - AV8

Emission AV8
Engine F402-RR-406A

Pollutant	Single Departure Operation Emissions				Single Arrival Operation Emission									
	Conventional Takeoff (Lbs/takeoff)	Short takeoff (Lbs/takeoff)	Vertical Takeoff (Lbs/takeoff)	**Single Departure (Lbs/Op.)**	Conventional Landing With a Straight In Approach (Lbs/ landing)	Conventional Landing With a Break Approach (Lbs/ landing)	Slow Landing With a Straight In Approach (Lbs/ landing)	Slow Landing With a Break Approach (Lbs/ landing)	Rolling Vertical Landing With a Straight In Approach (Lbs/ landing)	Rolling Vertical Landing With a Break Approach (Lbs/ landing)	Vertical Landing With a Straight In Approach (Lbs/ landing)	Vertical Landing With a Break Approach (Lbs/ landing)	**Single Straight in Arrival (Lbs/ Op.)**	**Single Break Arrival (Lbs/ Op.)**
NO_X	2.04	2.32	4.6	**4.6**	3.34	2.36	4.35	3.37	6.26	5.28	7.57	6.59	**7.57**	**6.59**
HC	5.72	5.72	5.73	**5.73**	8.18	8.31	8.21	8.34	8.24	8.37	8.24	8.37	**8.24**	**8.37**
CO	32.24	32.2	32.21	**32.24**	46.85	47.08	47.11	47.34	47.2	47.43	46.93	47.16	**47.2**	**47.43**
SO_2	0.19	0.19	0.23	**0.23**	0.3	0.26	0.34	0.3	0.39	0.35	0.41	0.37	**0.41**	**0.37**
PM_{10}	3.82	3.82	3.9	**3.9**	5.94	5.64	6.28	5.98	6.48	6.18	6.48	6.18	**6.48**	**6.18**
CO_2	1,390.50	1,428.00	1,731.10	**1731.1**	2,231.80	1,909.40	2,571.30	2,248.80	2,949.40	2,626.90	3,115.90	2,793.40	**3115.9**	**2793.4**

Pollutant	Sortie Emission								Maintenance Emissions			Total AV8, AV-8B Emissions	
	# of LTO Straight in Arrival (LTOs/Yr)	LTO Straight in Arrival Emission (Lb/Yr)	# of LTO Break Arrival (LTOs/Yr)	LTO Break Arrival Emissions (Lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircraft	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	203	2470.51	247	2763.93	9.13	131	1196.03	6430.47	6	109.11	654.66	7085.13	3.542565
HC	203	2835.91	247	3482.7	0.36	131	47.16	6365.77	6	252.27	1513.62	7879.39	3.939695
CO	203	16126.32	247	19678.49	4.47	131	585.57	36390.38	6	1430.02	8580.12	44970.5	22.48525
SO_2	203	129.92	247	148.2	0.34	131	44.54	322.66	6	9.16	54.96	377.62	0.18881
PM_{10}	203	2107.14	247	2489.76	2.67	131	349.77	4946.67	6	179.57	1077.42	6024.09	3.012045
CO_2	203	983941	247	1117551.5	2,669.10	131	349652.1	2451144.6	6	69,195.00	415170	2866314.6	1433.1573

Notes
1. Emission Factors for day attack were used.
2. Emission Factors are obtained from the Aircraft Environmental Support Office memo reports 9913D and 9963C.
3. Specific types of takeoffs and landings most used by the Harrier at China Lake are not known. Highest emission factors selected to account for all types of takeoffs and landings.

Table - 29
Aircraft
Proposed Emissions - F-35

Emission F-35
Engine F-135

						Maintenance Emissions			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)[2]	LTO Emission Rate Break arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	14.65		2521	36932.65	36932.65			0	36932.65	18.466325
HC	0.2		2521	504.2	504.2			0	504.2	0.2521
CO	17.08		2521	43058.68	43058.68			0	43058.68	21.52934
SO_2	0.69		2521	1739.49	1739.49			0	1739.49	0.869745
PM_{10}	9.52		2521	23999.92	23999.92			0	23999.92	11.99996
CO_2	5,584.00		2521	14077264	14077264			0	14077264	7038.632

Note:
1. Emission factors are obtained from JSF office.
2. The emissions from various arrivals and departures are estimated as a LTO with a straight in arrival.
3. T&G flight operations are added to LTO straight in arrival.

Table - 30
Aircraft
Proposed Emissions - F/A-18E/F

Emission F/A-18E/F
Engine F414-GE-400

											Maintenance Emissions			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	# of LTO Straight in Arrival (LTO/Yr)	Straight in Arrival Emissions (Lbs/Yr)	LTO Emission Rate Break arrival (Lb/LTO)	# of LTO Break Arrival (LTOs/Yr)	Break Arrival Emissions (Lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	31.08	1428	44382.24	31.15	4934	153694.1	14.47	1484	21469.8625	219546.203	24	814.18	19540.32	239086.523	119.543261
HC	69.7	1428	99531.6	70.27	4934	346712.18	0.08	1484	118.7	446362.48	24	2,155.43	51730.32	498092.8	249.0464
CO	265.3	1428	378848.4	266.46	4934	1314713.64	0.5	1484	741.875	1694303.92	24	10,917.02	262008.48	1956312.4	978.156198
SO_2	1.04	1428	1485.12	1.01	4934	4983.34	0.28	1484	415.45	6883.91	24	31.23	749.52	7633.43	3.816715
PM_{10}	18.21	1428	26003.88	17.54	4934	86542.36	3.95	1484	5860.8125	118407.053	24	488.03	11712.72	130119.773	65.0598863
CO_2	7,823.99	1428	11172657.7	7,553.13	4934	37267143.4	2,249.53	1484	3337740.14	51777541.3	24	228,716.14	5489187.36	57266728.6	28633.3643

Note:
1. Emission factors are obtained from the Aircraft Environmental Support Office memo reports 9815G and 9933D.

Table - 31
Aircraft
Proposed Emissions - F/A-18A-D

Emission F/A-18A-D
Engine F404-GE-400

											Maintenance Emissions			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	# of LTO Straight in Arrival (LTO/Yr)	Straight in Arrival Emissions (Lbs/Yr)	LTO Emission Rate Break arrival (Lb/LTO)	# of LTO Break Arrival (LTOs/Yr)	Break Arrival Emissions (Lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	13.09	415	5432.35	13.49	496	6691.04	4.77	254	1211.58	13334.97	14	447.60	6266.4	19601.37	9.800685
HC	53.74	415	22302.1	54.35	496	26957.6	0.19	254	48.26	49307.96	14	1620.80	22691.2	71999.16	35.99958
CO	139.40	415	57851	141.32	496	70094.72	0.95	254	241.3	128187.02	14	4389.30	61450.2	189637.22	94.81861
SO_2	0.82	415	340.3	0.82	496	406.72	0.18	254	45.72	792.74	14	25.60	358.4	1151.14	0.57557
PM_{10}	16.17	415	6710.55	15.98	496	7926.08	2.55	254	647.7	15284.33	14	447.10	6259.4	21543.73	10.771865
CO_2	6100.69	415	2531786.35	6034.31	496	2993017.76	1454.15	254	369354.1	5894158.21	14	189634.40	2654881.6	8549039.81	4274.51991

Note:
1. Emission factors are obtained from the Aircraft Environmental Support Office memo reports 9815G and 9933D.

Table - OH
Aircraft
Proposed Emissions - EA-18G

Emission EA-18G
Engine F414-GE-400

											Maintenance Emissions			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)[2]	# of LTO Straight in Arrival (LTO/Yr)	Straight in Arrival Emissions (Lbs/Yr)	LTO Emission Rate Break arrival (Lb/LTO)	# of LTO Break Arrival (LTOs/Yr)	Break Arrival Emissions (Lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	31.08	38	1181.04	31.15	169	5264.35	14.47	46	665.62	7111.01	1	814.18	814.18	7925.19	3.962595
HC	69.7	38	2648.6	70.27	169	11875.63	0.08	46	3.68	14527.91	1	2,155.43	2155.43	16683.34	8.34167
CO	265.3	38	10081.4	266.46	169	45031.74	0.5	46	23	55136.14	1	10,917.02	10917.02	66053.16	33.02658
SO_2	1.04	38	39.52	1.01	169	170.69	0.28	46	12.88	223.09	1	31.23	31.23	254.32	0.12716
PM_{10}	18.21	38	691.98	17.54	169	2964.26	3.95	46	181.7	3837.94	1	488.03	488.03	4325.97	2.162985
CO_2	7,823.99	38	297311.62	7,553.13	169	1276478.97	2,249.53	46	103478.38	1677268.97	1	228,716.14	228716.14	1905985.11	952.992555

Note:
1. Emission factors are obtained from AESO Report No. 9815, Revision G, March 2011 and 9933, Revision D, March 2011.
2. The emission rates for a EA-18G are assumed to be the same as that for the F/A-18E/F.

Table - 33
Aircraft
Proposed Emissions - F-14A

Emission F-14 A

Engine TF30-P-412A

	Sortie Emission								**Maintenance Emissions**			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	LTO Emission Rate Break arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	17.47	17.64	9	158.76	4.19	2	8.38	167.14	0	826.40	0	167.14	0.08357
HC	53.08	53.27	9	479.43	1.13	2	2.26	481.69	0	3,119.40	0	481.69	0.240845
CO	90.05	90.59	9	815.31	2.65	2	5.3	820.61	0	5,021.80	0	820.61	0.410305
SO_2	1.15	1.16	9	10.44	0.16	2	0.32	10.76	0	54.4	0	10.76	0.00538
PM_{10}	16.12	16.32	9	146.88	2.68	2	5.36	152.24	0	863.1	0	152.24	0.07612
CO_2	9651.04	9742.32	9	87680.88	1,337.30	2	2674.6	90355.48	0	459,338.90	0	90355.48	45.17774

Note:

1. Emission factors are obtained from the Aircraft Environmental Support Office memo reports 9813H and 9945C.

Table - 34
Aircraft
Proposed Emissions - F-14B/D

Emission F-14 B/D
Engine F110-GE-400

	Sortie Emission								Maintenance Emissions			Total Emissions	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	LTO Emission Rate Break arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	18.43	16.93	9	165.87	4.47	1	4.47	170.34	0	1,536.50	0	170.34	0.08517
HC	7.13	7.28	9	65.52	0.5	1	0.5	66.02	0	414.80	0	66.02	0.03301
CO	31.08	31.9	9	287.1	1.21	1	1.21	288.31	0	2,521.00	0	288.31	0.144155
SO_2	1.09	1.05	9	9.81	0.17	1	0.17	9.98	0	70.7	0	9.98	0.00499
PM_{10}	23.59	23.4	9	212.31	2.62	1	2.62	214.93	0	1,261.70	0	214.93	0.107465
CO_2	8,610.51	8,270.17	9	77494.59	1,369.90	1	1369.9	78864.49	0	556,620.70	0	78864.49	39.432245

Note:
1. Emission factors are obtained from the Aircraft Environmental Support Office memo reports 9813H and 9945C.

Table - op
Aircraft
Proposed Emissions - Harrier

Emission Harrier modeled as AV8 AV-8B
Engine F402-RR-406A

Pollutant	Single Departure Operation Emissions				Single Arrival Operation Emission								
	Conventional Takeoff (Lbs/takeoff)	Short takeoff (Lbs/takeoff)	Vertical Takeoff (Lbs/takeoff)	**Single Departure (Lbs/Op.)**	Conventional Landing With a Straight In Approach (Lbs/ landing)	Conventional Landing With a Break Approach (Lbs/ landing)	Slow Landing With a Straight In Approach (Lbs/ landing)	Slow Landing With a Break Approach (Lbs/ landing)	Rolling Vertical Landing With a Straight In Approach (Lbs/ landing)	Rolling Vertical Landing With a Break Approach (Lbs/ landing)	Vertical Landing With a Straight In Approach (Lbs/ landing)	Vertical Landing With a Break Approach (Lbs/ landing)	**Single Arrival (Lbs/ Op.)**
NO_X	2.04	2.32	4.6	**4.6**	3.34	2.36	4.35	3.37	6.26	5.28	7.57	6.59	**7.57**
HC	5.72	5.72	5.73	**5.73**	8.18	8.31	8.21	8.34	8.24	8.37	8.24	8.37	**8.37**
CO	32.24	32.2	32.21	**32.24**	46.85	47.08	47.11	47.34	47.2	47.43	46.93	47.16	**47.43**
SO_2	0.19	0.19	0.23	**0.23**	0.3	0.26	0.34	0.3	0.39	0.35	0.41	0.37	**0.41**
PM_{10}	3.82	3.82	3.9	**3.9**	5.94	5.64	6.28	5.98	6.48	6.18	6.48	6.18	**6.48**
CO_2	1,390.50	1,428.00	1,731.10	**1731.1**	2,231.80	1,909.40	2,571.30	2,248.80	2,949.40	2,626.90	3,115.90	2,793.40	**3115.9**

Pollutant							Maintenance Emissions			Total AV8, AV-8B Emissions	
	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	18	219.06	9.13	3	27.39	246.45	6	109.11	654.66	901.11	0.450555
HC	18	253.8	0.36	3	1.08	254.88	6	252.27	1513.62	1768.5	0.88425
CO	18	1434.06	4.47	3	13.41	1447.47	6	1430.02	8580.12	10027.59	5.013795
SO_2	18	11.52	0.34	3	1.02	12.54	6	9.16	54.96	67.5	0.03375
PM_{10}	18	186.84	2.67	3	8.01	194.85	6	179.57	1077.42	1272.27	0.636135
CO_2	18	87246	2,669.10	3	8007.3	95253.3	6	69,195.00	415170	510423.3	255.21165

Note:

1. Emission factors are obtained from AESO Report No. 9913, Revision D, November 2009, and AESO Report No. 9963 Revision C, November 2009.
2. Specific types of takeoffs and landings most used by the Harrier at China Lake are not known. Highest emission factors selected to account for all types of takeoffs and landings.

Table - 36
Aircraft
Proposed Emissions - C-130J

Emission C-130 J
Engine T56-A-16

	Sortie Emission								**Maintenance Emissions**			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	LTO Emission Rate Break arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	19.91	23.34	31	723.54	3.67	5	18.35	741.89	0		0	741.89	0.370945
HC	0.1	0.11	31	3.41	0.01	5	0.05	3.46	0		0	3.46	0.00173
CO	5.99	5.47	31	185.69	0.48	5	2.4	188.09	0		0	188.09	0.094045
SO_2	0.79	0.86	31	26.66	0.13	5	0.65	27.31	0		0	27.31	0.013655
PM_{10}	2.96	3.27	31	101.37	0.52	5	2.6	103.97	0		0	103.97	0.051985
CO_2	6,294.00	6,912.00	31	214272	1,063.30	5	5316.5	219588.5	0		0	219588.5	109.79425

Note:
1. Emission Factors are obtained from the Aircraft Environmental Support Office memo reports 2000-09B and 2000-10B.

Table - 37
Aircraft
Proposed Emissions - KC-130F/R/T

Emission KC-130F/R/T
Engine T56-A-16

	Sortie Emission								**Maintenance Emissions**			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	LTO Emission Rate Break arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	17.35	19.17	31	594.27	2.8	5	14	608.27	0		0	608.27	0.304135
HC	7.65	7.39	31	237.15	0.15	5	0.75	237.9	0		0	237.9	0.11895
CO	14.79	13.78	31	458.49	0.63	5	3.15	461.64	0		0	461.64	0.23082
SO_2	0.95	0.99	31	30.69	0.13	5	0.65	31.34	0		0	31.34	0.01567
PM_{10}	9.03	9.42	31	292.02	1.3	5	6.5	298.52	0		0	298.52	0.14926
CO_2	7,570.00	7,896.00	31	244776	1,051.30	5	5256.5	250032.5	0		0	250032.5	125.01625

Note:
1. Emission Factors are obtained from the Aircraft Environmental Support Office memo reports 2000-09B and 2000-10B.

Table -38
Aircraft
Proposed Emissions - E-2

Emission E-2
Engine T56-A-16

	Sortie Emission								**Maintenance Emissions**			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	LTO Emission Rate Break arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	6.61	7.92	16	126.72	2.85	3	8.55	135.27	0		0	135.27	0.067635
HC	9.37	9.39	16	150.24	0.11	3	0.33	150.57	0		0	150.57	0.075285
CO	13.91	13.96	16	223.36	0.5	3	1.5	224.86	0		0	224.86	0.11243
SO_2	0.41	0.46	16	7.36	0.13	3	0.39	7.75	0		0	7.75	0.003875
PM_{10}	4.11	4.61	16	73.76	1.26	3	3.78	77.54	0		0	77.54	0.03877
CO_2	-	-	-	-	-	-	-	-	-	-	-	-	-

Note:
1. Emission Factors are obtained from the Aircraft Environmental Support Office memo reports 9920B and 9943B.

Table - 39
Aircraft
Proposed Emissions - DC-9

Emissions for DC-9
Engine JT8D-9 or 9A

	Sortie Emission				**Maintenance Emissions**			**Total DC-9 Emissions**	
Pollutant	LTO Emission Rate (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	18.6	31	576.6	576.6		208.5	0	576.6	0.2883
HC	8.8	31	272.8	272.8		136.4	0	272.8	0.1364
CO	33.3	31	1032.3	1032.3		496.9	0	1032.3	0.51615
SO_2	1	31	31	31		12.2	0	31	0.0155
PM_{10}	33.1	31	1026.1	1026.1		413	0	1026.1	0.51305
CO_2	7992	31	247752	247752		95963	0	247752	123.876

Note:
1. Emission Factors are obtained from the Aircraft Environmental Support Office Memo Report 9926A.

Table - пл
Aircraft
Proposed Emissions - H-1

Emission UH-1
Engine T400-CP-400

	Sortie Emission				**Maintenance Emissions**			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	1.28	810	1036.8	1036.8	2	20.86	41.72	1078.52	0.53926
HC	0.67	810	542.7	542.7	2	21.74	43.48	586.18	0.29309
CO	3.32	810	2689.2	2689.2	2	99.86	199.72	2888.92	1.44446
SO_2	0.11	810	89.1	89.1	2	2.09	4.18	93.28	0.04664
PM_{10}	1.18	810	955.8	955.8	2	21.92	43.84	999.64	0.49982
CO_2	-	-	-	-	-	-	-	-	-

Note:
1. Emission factors are obtained from AESO Report No. 9904, Revision A, May 1999.

Table - 41
Aircraft
Proposed Emissions - AH-1

Emission AH-1
Engine T700-GE-401C

	Sortie Emission				**Maintenance Emissions**			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	2.09	261	545.49	545.49	2	15.88	31.76	577.25	0.288625
HC	0.33	261	86.13	86.13	2	4.23	8.46	94.59	0.047295
CO	7.08	261	1847.88	1847.88	2	76.33	152.66	2000.54	1.00027
SO_2	0.17	261	44.37	44.37	2	1.40	2.8	47.17	0.023585
PM_{10}	1.80	261	469.8	469.8	2	14.67	29.34	499.14	0.24957
CO_2	852.02	261	222377.22	222377.22	2	11,039.15	22078.3	244455.52	122.22776

Note:
1. Emission factors are obtained from AESO Report No. 9824, Revision B, November 2009.

Table - 42
Aircraft
Proposed Emissions - CH-46

Emission CH-46
Engine T58-GE-16

	Sortie Emission				**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	1.07	78	83.46	83.46	83.46	0.04173
HC	6.81	78	531.18	531.18	531.18	0.26559
CO	21.37	78	1666.86	1666.86	1666.86	0.83343
SO_2	0.15	78	11.7	11.7	11.7	0.00585
PM_{10}	1.36	78	106.08	106.08	106.08	0.05304
CO_2	1,130	78	88140	88140	88140	44.07

Note:
1. Emission Factors are obtained from the Aircraft Environmental Support Office memo reports 9816F.

Table - 43
Aircraft
Proposed Emissions - H-60

Emission H-60
Engine T700-GE-401C

	Sortie Emission				**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	3.4	148	503.2	503.2	503.2	0.2516
HC	1.4	148	207.2	207.2	207.2	0.1036
CO	12.3	148	1820.4	1820.4	1820.4	0.9102
SO_2	0.3	148	44.4	44.4	44.4	0.0222
PM_{10}	2.3	148	340.4	340.4	340.4	0.1702
CO_2	3,000	148	444000	444000	444000	222

Note:
1. Emission factors are obtained from AESO Report No. 9929, Revision A, November 2009.

Table - 44
Aircraft
Proposed Emissions - HH-60

Emission HH-60
Engine T700-GE-401C

	Sortie Emission				**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	3.4	56	190.4	190.4	190.4	0.0952
HC	1.4	56	78.4	78.4	78.4	0.0392
CO	12.3	56	688.8	688.8	688.8	0.3444
SO_2	0.3	56	16.8	16.8	16.8	0.0084
PM_{10}	2.3	56	128.8	128.8	128.8	0.0644
CO_2	3,000	56	168000	168000	168000	84

Note:
1. Emission factors are obtained from AESO Report No. 9929, Revision A, November 2009.

Table - 45
Aircraft
Proposed Emissions - MH-60

Emission MH-60
Engine T700-GE-401C

	Sortie Emission				**Maintenance Emissions**			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircrafts	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	3.4	33	112.2	112.2	3	108.00	324	436.2	0.2181
HC	1.4	33	46.2	46.2	3	39.00	117	163.2	0.0816
CO	12.3	33	405.9	405.9	3	265.30	795.9	1201.8	0.6009
SO_2	0.3	33	9.9	9.9	3	7.3	21.9	31.8	0.0159
PM_{10}	2.3	33	75.9	75.9	3	63.30	189.9	265.8	0.1329
CO_2	3,000	33	99000	99000	3	58,280	174841.2	273841.2	136.9206

Note:
1. Emission factors are obtained from AESO Report No. 9929, Revision A, November 2009.

Table - 46
Aircraft
Proposed Emissions - LJ-35

Emission LJ-35
Engine: TFE731-2-2B

	Sortie Emission														**Maintenance Emissions**			**Total Emissions**	
Pollutant	LTO Emission Rate Straight in arrival (Lb/LTO)	LTO Emission Rate Break in arrival (Lb/LTO)	# of LTO (LTOs/Yr)	LTO Emissions (lbs/Yr)	T&G Emissions Rate (lbs/T&G)	# of T&G (T&Gs/Yr)	T&G emissions (lbs/Yr)	GCA Box Emission Rate (lbs/GCAs)	# of GCA Box (GCAs/Yr)	GCA Box Emission (lbs/Yr)	FCLP Emission Rate (lbs/FCLP)	# of FCLP (FCLPs/Yr)	FCLP Emissions (lbs/Yr)	Total Sortie Emissions (lbs/Yr)	# of Aircraft	Maintenance emissions (lbs/AC/Yr)	Total Maintenance Emissions (lbs/Yr)	Lbs/Yr	Tons/Yr
NO_X	1.695		154	261.03			0			0			0	261.03	0	0.00	0	261.03	0.130515
HC	5.934		154	913.836			0			0			0	913.836	0	0.00	0	913.836	0.456918
CO	21.291		154	3278.814			0			0			0	3278.814	0	0.00	0	3278.814	1.639407
SO_2	0.345		154	53.13			0			0			0	53.13	0	0	0	53.13	0.026565
PM_{10}	0.124		154	19.096			0			0			0	19.096	0	0.00	0	19.096	0.009548
CO_2	-		-	-	-	-	-			-			-	-	-	-	-	-	-

Note:
1. GA modeled as LJ-35.
2. Emission factors are obtained from EDMS version 5.0.2.
3. Emission factors include ground support equipment.

Table - 47
Aircraft
Proposed Emissions - A-10A/B, F-16C/D, UAVs

Aircraft	Engine	# LTO	# T&G	Total Emission Tons/Years				
				CO	NOX	SO2	VOC	PM10
A-10A/B	TF34-GE-100A	56	9	0.32	0.01	0.01	0.07	0.00
F-16C/D[3]	F110-GE-129	94	20	0.34	0.14	0.02	0.07	0.05
RQ-4A[4]	Allison AE3007	77	13	0.04	0.02	0.00	0.01	0.00

Note:
1. Emissions for aircrafts in this table have been estimated using US ACAM 4.5.0 Model for year 2011.
2. Emission factors include ground support equipment.
3. T-39 operations are modeled with F-16 operation.

Table - ny

Proposed Aircraft Emissions

Aircraft Type	Engine	Grouping	Total Emission Tons/Years					
			CO	NOX	SO2	HC	PM10	CO2
AV-8	F402-RR-406A	VM	22.49	3.54	0.19	3.94	3.01	1433.16
F-35	F-135		21.53	18.47	0.87	0.25	12.00	7038.63
F-18EF	F414-GE-400		978.16	119.54	3.82	249.05	65.06	28633.36
F-18A-D	F404-GE-400		94.82	9.80	0.58	36.00	10.77	4274.52
EA-18G	F414-GE-400		33.03	3.96	0.13	8.34	2.16	952.99
F-14A	TF30-P-412A	OM	0.41	0.08	0.01	0.24	0.08	45.18
F-14B/D	F110-GE-400		0.14	0.09	0.00	0.03	0.11	39.43
Harrier	F402-RR-408		5.01	0.45	0.03	0.88	0.64	255.21
C-130J	T406-AD-400		0.09	0.37	0.01	0.00	0.05	109.79
KC-130R/F/T	T56-A-16		0.23	0.30	0.02	0.12	0.15	125.02
E-2	T56-A-16		0.11	0.07	0.00	0.08	0.04	
A-10A/B	TF34-GE-100A		0.32	0.01	0.01	0.07	0.00	
F-16C/D	F110-GE-129		0.34	0.14	0.02	0.07	0.05	
RQ-4A	Allison AE3007		0.04	0.02	0.00	0.01	0.00	
H-1	T400-CP-400	Helo	1.44	0.54	0.05	0.29	0.50	
AH-1	T700-GE-401C		1.00	0.29	0.02	0.05	0.25	
CH-46	T58-GE-16		0.83	0.04	0.01	0.27	0.05	44.07
H-60	T700-GE-401C		0.91	0.25	0.02	0.10	0.17	222.00
HH-60	T700-GE-401C		0.34	0.10	0.01	0.04	0.06	84.00
MH-60	T700-GE-401C		0.60	0.22	0.02	0.08	0.13	136.92
DC9	JT8D-9 or 9A	AC	0.52	0.29	0.02	0.14	0.51	123.88
LJ 35	TFE731-2-2B	GA	1.64	0.13	0.03	0.46	0.01	
Total Emissions			1164.01	158.70	5.85	300.51	95.81	43518.16

Note:

1. Ref, Table 4-1 of Wyle's Noise Study Report Table
2. VM = Navy/Marine
3. OM = Other Military
4. Helo = Helicopter
5. AV = Air Carrier
6. GA = General Aviation

Additional Unmanned Aerial Vehicle Emissions

Table 49. Assumed Flight Tempos for Baseline Alternative and Proposed Action

UAS Group	Representative UAV	Flight Hours/ Sortie	Baseline Sorties/Year	Proposed Action Sorties/Year
1	WASP Class	1	8	80
	Raven 1		4	38
	Pointer 1		4	38
	Total Flight Hours/Year		16	156
2	ScanEagle 10		2	60
	Aerolight 8		3	100
	Total Flight Hours/Year		44	1,600
3	STUAS 10		2	160
	Shadow 7		1	200
	Total Flight Hours/Year		29	3,000
4 & 5	Fire Scout	6	50	100
	Predator 10		88	196
	UCLASS 8		--	100
	BAMS/Triton 8		40	80
	Total Flight Hours/Year		1,500	4,000

Table 50. Updated UAV Emissions – Baseline Alternative

Aerial Vehicle	Number of Sorties	VOC	NOX	CO		SOX	PM	CO2	CH4	N2O
ScanEagle	2	1.54E-01	2.05E-03	9.62E-02	1.16E-02		7.49E-02	1.50E+01	4.62E-04	5.33E-04
SE >3000'		8.28E-02	1.11E-03	5.20E-02	6.24E	-03	4.04E-02	8.12E+00	2.49E-04	2.87E-04
STUAS 10		5.13E-01	6.86E-03	3.21E-01	3.87E+01		2.51E-01	5.03E+01	1.54E-03	1.78E-03
STUAS >3000'		5.46E-01	7.29E-03	3.42E-01	4.11E+01		2.66E-01	5.34E+01	1.64E-03	1.89E-03
Aerolight 3		4.52E-01	3.32E-01	2.10E-01	1.78E-02		2.17E-02	3.25E+01	2.40E-03	2.77E-03
AL >3000'		3.39E-01	2.49E-01	1.57E-01	1.34E-02		1.63E-02	2.44E+01	3.39E-03	3.92E-03
Shadow 7		3.64E+00	2.67E+00	1.69E+00	1.43E-01		1.75E-01	2.62E+02	0.00E+00	0.00E+00
Shadow >3000'		2.73E+00	2.00E+00	1.27E+00	1.08E-01		1.31E-01	1.96E+02	0.00E+00	0.00E+00
Fire Scout	6	1.79E+01	3.76E+00	1.50E+01	3.47E-01		9.46E-01	2.47E+03	7.59E-02	8.76E-02
FS >3000'		6.95E+00	1.17E+00	1.74E+01	1.85E-01		1.36E+00	1.32E+03	4.05E-02	4.67E-02
Predator 10		2.24E+01	1.64E+01	1.04E+01	8.81E-01		1.07E+00	1.61E+03	0.00E+00	0.00E+00
Triton 8		9.42E-02	3.99E+01	1.31E+01	2.04E+00		8.05E+00	1.45E+04	4.46E-01	5.15E-01
UCLASS 8		1.05E+02	1.22E+02	4.75E+01	6.19E+00		6.58E+00	4.41E+04	1.35E+00	1.56E+00
	#/yr	1.60E+02	1.89E+02	1.08E+02	8.97E+0	1 1	1.90E+01	6.47E+04	1.93E+00	2.22E+00
	tpy	8.01E-02	9.44E-02	5.38E-02	4.49E-0	2 9	9.49E-03	3.23E+01	9.63E-04	1.11E-03

Table 51. Updated UAV Emissions – Proposed Action

Aerial Vehicle	Number of Sorties	VOC	NOX	CO		SOX	PM	CO2	CH4	N2O
ScanEagle	60	4.61E+00	6.16E-02	2.88E+00	3.47E-01		2.25E+00	4.51E+02	1.39E-02	1.60E-02
SE >3000'		2.48E+00	3.32E-02	1.56E+00	1.87E-01		1.21E+00	2.44E+02	7.46E-03	8.62E-03
STUAS 160		8.21E+00	1.10E-01	5.14E+00	6.19E+02		4.01E+00	8.04E+02	2.47E-02	2.85E-02
STUAS >3000'		8.74E+00	1.17E-01	5.47E+00	6.58E+02		4.25E+00	8.54E+02	2.62E-02	3.02E-02
Aerolight 100		1.51E+01	1.11E+01	7.00E+00	5.94E-01		7.24E-01	1.08E+03	8.01E-02	9.24E-02
AL >3000'		1.13E+01	8.29E+00	5.25E+00	4.45E-01		5.43E-01	8.12E+02	1.13E-01	1.31E-01
Shadow 200		1.04E+02	7.63E+01	4.83E+01	4.10E+00		5.00E+00	7.49E+03	0.00E+00	0.00E+00
Shadow >3000'		7.80E+01	5.72E+01	3.62E+01	3.07E+00		3.75E+00	5.60E+03	0.00E+00	0.00E+00
Fire Scout	100	2.98E+02	6.27E+01	2.51E+02	5.78E+00		1.58E+01	4.12E+04	1.27E+00	1.46E+00
FS >3000'		1.16E+02	1.94E+01	2.91E+02	3.08E+00		2.27E+01	2.20E+04	6.75E-01	7.79E-01
Predator 196		4.38E+02	3.21E+02	2.03E+02	1.73E+01		2.11E+01	3.15E+04	0.00E+00	0.00E+00
Triton 80		9.42E-01	3.99E+02	1.31E+02	2.04E+01		8.05E+01	1.45E+05	4.46E+00	5.15E+00
UCLASS 100		1.31E+03	1.53E+03	5.94E+02	7.74E+01		8.22E+01	5.51E+05	1.69E+01	1.96E+01
	#/yr	2.39E+03	2.48E+03	1.58E+03	1.41E+0	3	2.44E+02	8.08E+05	2.36E+01	2.72E+01
	tpy	1.20E+00	1.24E+00	7.91E-01	7.04E-01		1.22E-01	4.04E+02	1.18E-02	1.36E-02

ScanEagle			Emission Factors (lb/1000 lb fuel)							
Mode	Fuel flow (lb/min)	T.I.M (min)	VOC	NOX	CO	SOX	PM	CO2	CH4	N2O
Take off	1.42E-01	5	29.11	0.39	18.22	2.19	14.2	2849	0.0875	0.101
Climb out	1.11E-01	10	29.11	0.39	18.22	2.19	14.2	2849	0.0875	0.101
Approach	4.74E-02	15	29.11	0.39	18.22	2.19	14.2	2849	0.0875	0.101
Idle (taxi in)	1.11E-02	5	29.11	0.39	18.22	2.19	14.2	2849	0.0875	0.101
Idle (taxi out)	1.11E-02	5	29.11	0.39	18.22	2.19	14.2	2849	0.0875	0.101

ScanEagle	Emissions per operation (lb)							
Mode	VOC	NOX	CO	SOX	PM	CO2	CH4	N2O
Take off	2.07E-02	2.77E-04	1.30E-02	1.56E-03	1.01E-02	2.03E+00	6.22E-05	7.18E-05
Climb out	3.22E-02	4.30E-04	2.02E-02	2.42E-03	1.57E-02	3.15E+00	9.68E-05	1.12E-04
Approach	2.07E-02	2.77E-04	1.30E-02	1.56E-03	1.01E-02	2.03E+00	6.22E-05	7.18E-05
Idle (taxi in)	1.61E-03	2.15E-05	1.01E-03	1.21E-04	7.85E-04	1.58E-01	4.84E-06	5.59E-06
Idle (taxi out)	1.61E-03	2.15E-05	1.01E-03	1.21E-04	7.85E-04	1.58E-01	4.84E-06	5.59E-06
TOTAL	7.68E-02	1.03E-03	4.81E-02	5.78E-03	3.75E-02	7.52E+00	2.31E-04	2.67E-04

Aerolight			Emission Factors (lb/1000 lb fuel)							
Mode	Fuel flow (lb/min)	T.I.M (min)	VOC	NOX	CO	SOX	PM	CO2	CH4	N2O
Take off	1.05E-01	5	29.11	0.39	18.22	2.19	14.2	2849	0.0875	0.101
Climb out	9.54E-02	10	29.11	0.39	18.22	2.19	14.2	2849	0.0875	0.101
Approach	7.34E-02	15	29.11	0.39	18.22	2.19	14.2	2849	0.0875	0.101
Idle (taxi in)	7.34E-03	5	29.11	0.39	18.22	2.19	14.2	2849	0.0875	0.101
Idle (taxi out)	7.34E-03	5	29.11	0.39	18.22	2.19	14.2	2849	0.0875	0.101

Aerolight	Emissions per operation (lb)							
Mode	VOC	NOX	CO	SOX	PM	CO2	CH4	N2O
Take off	1.89E-02	1.38E-02	8.76E-03	7.42E-04	9.05E-04	1.36E+00	5.66E-05	6.54E-05
Climb out	3.77E-02	2.76E-02	1.75E-02	1.48E-03	1.81E-03	2.71E+00	8.82E-05	1.02E-04
Approach	5.66E-02	4.15E-02	2.62E-02	2.23E-03	2.72E-03	4.06E+00	5.66E-04	6.54E-04
Idle (taxi in)	1.89E-02	1.38E-02	8.76E-03	7.42E-04	9.05E-04	1.36E+00	4.42E-05	5.10E-05
Idle (taxi out)	1.89E-02	1.38E-02	8.76E-03	7.42E-04	9.05E-04	1.36E+00	4.42E-05	5.10E-05
TOTAL	1.51E-01	1.11E-01	7.00E-02	5.94E-03	7.24E-03	1.08E+01	8.01E-04	9.24E-04

STUAS		Emission Factors (lb/1000 lb fuel)								
Mode	Fuel flow (lb/min)	T.I.M (min)	VOC	NOX	CO	SOX	PM	CO2	CH4	N2O
Take off	2.50E-02	5	29.11	0.39	18.22	2.19	14.2	2849	0.0875	0.101
Climb out	1.94E-02	10	29.11	0.39	18.22	2.19	14.2	2849	0.0875	0.101
Approach	8.33E-02	15	29.11	0.39	18.22	2.19	14.2	2849	0.0875	0.101
Idle (taxi in)	1.94E-02	5	29.11	0.39	18.22	2.19	14.2	2849	0.0875	0.101
Idle (taxi out)	1.94E-02	5	29.11	0.39	18.22	2.19	14.2	2849	0.0875	0.101

STUAS	Emissions per operation (lb)							
Mode	VOC	NOX	CO	SOX	PM	CO2	CH4	N2O
Take off	3.64E-03	4.86E-05	2.28E-03	2.74E-01	1.78E-03	3.56E-01	1.09E-05	1.26E-05
Climb out	5.66E-03	7.56E-05	3.54E-03	4.26E-01	2.76E-03	5.54E-01	1.70E-05	1.96E-05
Approach	3.64E-02	4.86E-04	2.28E-02	2.74E+00	1.77E-02	3.56E+00	1.09E-04	1.26E-04
Idle (taxi in)	2.83E-03	3.78E-05	1.77E-03	2.13E-01	1.38E-03	2.77E-01	8.51E-06	9.82E-06
Idle (taxi out)	2.83E-03	3.78E-05	1.77E-03	2.13E-01	1.38E-03	2.77E-01	8.51E-06	9.82E-06
TOTAL	5.13E-02	6.86E-04	3.21E-02	3.87E+00	2.51E-02	5.03E+00	1.54E-04	1.78E-04

Source = AP-42

Shadow			Emission Factors (lb/min)					
Mode	Fuel flow (lb/min)	T.I.M (min)	VOC	NOX	CO	SOX	PM	CO2
Take off	3.61E-01	5	1.30E-02	9.53E-03	6.03E-03	5.12E-04	6.25E-04	0.936
Climb out	3.29E-01	10	1.30E-02	9.53E-03	6.03E-03	5.12E-04	6.25E-04	0.936
Approach	2.53E-01	15	1.30E-02	9.53E-03	6.03E-03	5.12E-04	6.25E-04	0.936
Idle (taxi in)	2.53E-02	5	1.30E-02	9.53E-03	6.03E-03	5.12E-04	6.25E-04	0.936
Idle (taxi out)	2.53E-02	5	1.30E-02	9.53E-03	6.03E-03	5.12E-04	6.25E-04	0.936

Shadow	Emissions per operation (lb)					
Mode	VOC	NOX	CO	SOX	PM	CO2
Take off	6.50E-02	4.77E-02	3.02E-02	2.56E-03	3.12E-03	4.68E+00
Climb out	1.30E-01	9.53E-02	6.03E-02	5.12E-03	6.25E-03	9.36E+00
Approach	1.95E-01	1.43E-01	9.05E-02	7.68E-03	9.37E-03	1.40E+01
Idle (taxi in)	6.50E-02	4.77E-02	3.02E-02	2.56E-03	3.12E-03	4.68E+00
Idle (taxi out)	6.50E-02	4.77E-02	3.02E-02	2.56E-03	3.12E-03	4.68E+00
TOTAL	5.20E-01	3.81E-01	2.41E-01	2.05E-02	2.50E-02	3.74E+01

Data source = USAF 2002 (for Bell 407)

Fire Scout			Emission Factors (lb/1000 lb fuel)							
Mode	Fuel flow (lb/min)	T.I.M (min)	VOC	NOX	CO	SOX	PM	CO2	CH4	N2O
TO/CO 11.61		6.8	0.3	6.33	3.59	0.4	0.31	2849	0.0875	0.101
Approach 3.78		6.8	15.02	2.52	37.71	0.4	2.95	2849	0.0875	0.101
Idle (taxi in)	2.66	7	64.28	1.58	31.45	0.4	1.44	2849	0.0875	0.101
Idle (taxi out)	2.66	8	64.28	1.58	31.45	0.4	1.44	2849	0.0875	0.101

Fire Scout	Emissions per operation (lb)							
Mode	VOC	NOX	CO	SOX	PM	CO2	CH4	N2O
Take off	2.37E-02	5.00E-01	2.83E-01	3.16E-02	2.45E-02	2.25E+02	6.91E-03	7.97E-03
Approach	3.86E-01	6.48E-02	9.69E-01	1.03E-02	7.58E-02	7.32E+01	2.25E-03	2.60E-03
Idle (taxi in)	1.20E+00	2.94E-02	5.86E-01	7.45E-03	2.68E-02	5.30E+01	1.63E-03	1.88E-03
Idle (taxi out)	1.37E+00	3.36E-02	6.69E-01	8.51E-03	3.06E-02	6.06E+01	1.86E-03	2.15E-03
TOTAL	2.98E+00	6.27E-01	2.51E+00	5.78E-02	1.58E-01	4.12E+02	1.27E-02	1.46E-02

Predator		Emission Factors (lb/1000 lb fuel)						
Mode	Fuel flow (lb/min)	T.I.M (min)	VOC	NOX	CO	SOX	PM	CO2
Take off	1.55E+00	5	5.59E-02	4.10E-02	2.59E-02	2.20E-03	2.69E-03	4.02E+00
Climb out	1.41E+00	10	5.59E-02	4.10E-02	2.59E-02	2.20E-03	2.69E-03	4.02E+00
Approach	1.09E+00	15	5.59E-02	4.10E-02	2.59E-02	2.20E-03	2.69E-03	4.02E+00
Idle (taxi in)	1.09E-01	5	5.59E-02	4.10E-02	2.59E-02	2.20E-03	2.69E-03	4.02E+00
Idle (taxi out)	1.09E-01	5	5.59E-02	4.10E-02	2.59E-02	2.20E-03	2.69E-03	4.02E+00

Predator	Emissions per operation (lb)					
Mode VOC		NOX	CO	SOX	PM	CO2
Take off	2.80E-01	2.05E-01	1.30E-01	1.10E-02	1.34E-02	2.01E+01
Climb out	5.59E-01	4.10E-01	2.59E-01	2.20E-02	2.69E-02	4.02E+01
Approach	8.39E-01	6.15E-01	3.89E-01	3.30E-02	4.03E-02	6.02E+01
Idle (taxi in)	2.80E-01	2.05E-01	1.30E-01	1.10E-02	1.34E-02	2.01E+01
Idle (taxi out)	2.80E-01	2.05E-01	1.30E-01	1.10E-02	1.34E-02	2.01E+01
TOTAL	2.24E+00	1.64E+00	1.04E+00	8.81E-02	1.07E-01	1.61E+02

Data source = USAF 2002

UCLASS			Emission Factors (lb/1000 lb fuel)							
Mode	Fuel flow (lb/min)	T.I.M (min)	VOC	NOX	CO	SOX	PM	CO2	CH4	N2O
Take off	162.94	1	2.3	29.26	0.86	0.4	1.01	2849	0.0875	0.101
Climb out	97.38	0.5	3.51	22.13	0.86	0.4	1.21	2849	0.0875	0.101
Approach 65.21		3	4.88	12.32	1.92	0.4	1.03	2849	0.0875	0.101
Idle (taxi in)	38.2	10	7.57	4.6	3.52	0.4	0.26	2849	0.0875	0.101
Idle (taxi out)	38.2	30	7.57	4.6	3.52	0.4	0.26	2849	0.0875	0.101

UCLASS	Emissions per operation (lb)							
Mode VOC		NOX	CO	SOX	PM	CO2	CH4	N2O
Take off	3.75E-01	4.77E+00	1.40E-01	6.52E-02	1.65E-01	4.64E+02	1.43E-02	1.65E-02
Climb out	1.71E-01	1.08E+00	4.19E-02	1.95E-02	5.89E-02	1.39E+02	4.26E-03	4.92E-03
Approach	9.55E-01	2.41E+00	3.76E-01	7.83E-02	2.02E-01	5.57E+02	1.71E-02	1.98E-02
Idle (taxi in)	2.89E+00	1.76E+00	1.34E+00	1.53E-01	9.93E-02	1.09E+03	3.34E-02	3.86E-02
Idle (taxi out)	8.67E+00	5.27E+00	4.03E+00	4.58E-01	2.98E-01	3.26E+03	1.00E-01	1.16E-01
TOTAL	1.31E+01	1.53E+01	5.94E+00	7.74E-01	8.22E-01	5.51E+03	1.69E-01	1.96E-01

Data source = USAF 2002

BAMS/Triton			Emission Factors (lb/1000 lb fuel)							
Mode	Fuel flow (lb/min)	T.I.M (min)	VOC	NOX	CO	SOX	PM	CO2	CH4	N2O
Take off	34.33	2	0.01	15.06	0.45	0.4	1.58	2849	0.0875	0.101
Climb out	27.33	1	0.01	12.35	0.69	0.4	1.58	2849	0.0875	0.101
Approach 20.17		5	0.02	9.57	1.2	0.4	1.58	2849	0.0875	0.101
Idle (taxi in)	11	15	0.02	6.02	3.33	0.4	1.58	2849	0.0875	0.101
Idle (taxi out)	11	25	0.02	6.02	3.33	0.4	1.58	2849	0.0875	0.101

BAMS/Triton	Emissions per operation (lb)							
Mode VOC		NOX	CO	SOX	PM	CO2	CH4	N2O
Take off	6.87E-04	1.03E+00	3.09E-02	2.75E-02	1.08E-01	1.96E+02	6.01E-03	6.93E-03
Climb out	2.73E-04	3.38E-01	1.89E-02	1.09E-02	4.32E-02	7.79E+01	2.39E-03	2.76E-03
Approach	2.02E-03	9.65E-01	1.21E-01	4.03E-02	1.59E-01	2.87E+02	8.82E-03	1.02E-02
Idle (taxi in)	3.30E-03	9.93E-01	5.49E-01	6.60E-02	2.61E-01	4.70E+02	1.44E-02	1.67E-02
Idle (taxi out)	5.50E-03	1.66E+00	9.16E-01	1.10E-01	4.35E-01	7.83E+02	2.41E-02	2.78E-02
TOTAL	1.18E-02	4.99E+00	1.64E+00	2.55E-01	1.01E+00	1.81E+03	5.57E-02	6.43E-02

Attachment 2
Range Aircraft Flight Emissions Analysis Support Data

2004 EIS Range Flight Profile

Table - 1
2004 EIS Range Flight Profile - Airport Lake

Airport Lake			
Aircraft Type	Altitude	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
AH-1	0-2000	16	24
AH-1	2000-3000	0	n/a
AH-1	3000-4000	0	n/a
AH-1	4000-5000	0	n/a
AH-1	5000-10000	0	n/a
AH-1	10000+	16	1
UH-1	0-2000	24	3
UH-1	2000-3000	0	n/a
UH-1	3000-4000	0	n/a
UH-1	4000-5000	0	n/a
UH-1	5000-10000	0	n/a
UH-1	10000+	0	n/a
CH-46	0-2000	0	n/a
CH-46	2000-3000	0	n/a
CH-46	3000-4000	4	37
CH-46	4000-5000	4	42
CH-46	5000-10000	4	43
CH-46	10000+	0	n/a
F/A-18	0-2000	60	13
F/A-18	2000-3000	56	23
F/A-18	3000-4000	56	17
F/A-18	4000-5000	67	13
F/A-18	5000-10000	107	22
F/A-18	10000+	187	16
F-16	0-2000	4	13
F-16	2000-3000	4	1
F-16	3000-4000	4	1
F-16	4000-5000	0	n/a
F-16	5000-10000	16	9
F-16	10000+	12	28
C-130	0-2000	0	n/a
C-130	2000-3000	0	n/a
C-130	3000-4000	0	n/a
C-130	4000-5000	0	n/a
C-130	5000-10000	0	n/a
C-130	10000+	4	1
AV-8	0-2000	12	12
AV-8	2000-3000	12	9
AV-8	3000-4000	4	27
AV-8	4000-5000	8	20
AV-8	5000-10000	24	21
AV-8	10000+	36	16
F-14	0-2000	0	n/a
F-14	2000-3000	0	n/a
F-14	3000-4000	0	n/a
F-14	4000-5000	0	n/a
F-14	5000-10000	4	1
F-14	10000+	0	n/a

Table - 2
2004 EIS Range Flight Profile - Baker North

Baker North			
Aircraft Type	Altitude	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
AH-1	**0-250**	24	20
AH-1	250-500	8	8
AH-1	500-1000	4	1
AH-1	1000-2000	0	n/a
AH-1	2000-3000	0	n/a
AH-1	3000-4000	0	n/a
AH-1	4000-5000	0	n/a
AH-1	5000-10000	0	n/a
AH-1	10000+	16	6
UH-1	**0-250**	8	16
UH-1	250-500	8	4
UH-1	500-1000	0	n/a
UH-1	1000-2000	0	n/a
UH-1	2000-3000	0	n/a
UH-1	3000-4000	0	n/a
UH-1	4000-5000	0	n/a
UH-1	5000-10000	0	n/a
UH-1	10000+	0	n/a
CH-46	**0-250**	16	14
CH-46	250-500	8	33
CH-46	500-1000	20	55
CH-46	1000-2000	0	n/a
CH-46	2000-3000	0	n/a
CH-46	3000-4000	4	37
CH-46	4000-5000	8	20
CH-46	5000-10000	8	21
CH-46	10000+	0	n/a
F/A-18	**0-250**	0	n/a
F/A-18	250-500	8	8
F/A-18	500-1000	32	7
F/A-18	1000-2000	67	10
F/A-18	2000-3000	52	14
F/A-18	3000-4000	60	9
F/A-18	4000-5000	36	6
F/A-18	5000-10000	127	9
F/A-18	10000+	262	17
F-16	**0-250**	0	n/a
F-16	250-500	0	n/a
F-16	500-1000	0	n/a
F-16	1000-2000	0	n/a
F-16	2000-3000	0	n/a
F-16	3000-4000	0	n/a
F-16	4000-5000	0	n/a
F-16	5000-10000	8	19

Table - 2
2004 EIS Range Flight Profile - Baker North

Baker North			
Aircraft Type	Altitude	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
F-16	10000+	16	24
C-130	**0-250**	0	n/a
C-130	250-500	0	n/a
C-130	500-1000	0	n/a
C-130	1000-2000	0	n/a
C-130	2000-3000	0	n/a
C-130	3000-4000	0	n/a
C-130	4000-5000	0	n/a
C-130	5000-10000	0	n/a
C-130	10000+	4	1
AV-8	**0-250**	0	n/a
AV-8	250-500	4	5
AV-8	500-1000	8	3
AV-8	1000-2000	28	9
AV-8	2000-3000	16	7
AV-8	3000-4000	12	1
AV-8	4000-5000	12	1
AV-8	5000-10000	48	20
AV-8	10000+	95	17
F-14	**0-250**	0	n/a
F-14	250-500	4	4
F-14	500-1000	4	1
F-14	1000-2000	4	7
F-14	2000-3000	4	6
F-14	3000-4000	0	n/a
F-14	4000-5000	0	n/a
F-14	5000-10000	8	27
F-14	10000+	24	8

Table - 3
2004 EIS Range Flight Profile - Baker South

Baker South			
Aircraft Type	Altitude	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
AH-1	**0-250**	4	29
AH-1	250-500	8	19
AH-1	500-1000	8	9
AH-1	1000-2000	0	n/a
AH-1	2000-3000	0	n/a
AH-1	3000-4000	0	n/a
AH-1	4000-5000	0	n/a
AH-1	5000-10000	0	n/a
AH-1	10000+	0	n/a
UH-1	**0-250**	12	2
UH-1	250-500	12	1
UH-1	500-1000	8	1
UH-1	1000-2000	0	n/a
UH-1	2000-3000	0	n/a
UH-1	3000-4000	0	n/a
UH-1	4000-5000	0	n/a
UH-1	5000-10000	0	n/a
UH-1	10000+	0	n/a
CH-46	**0-250**	4	11
CH-46	250-500	4	12
CH-46	500-1000	4	11
CH-46	1000-2000	4	12
CH-46	2000-3000	8	6
CH-46	3000-4000	8	7
CH-46	4000-5000	4	2
CH-46	5000-10000	8	19
CH-46	10000+	0	n/a
F/A-18	**0-250**	4	6
F/A-18	250-500	48	10
F/A-18	500-1000	83	14
F/A-18	1000-2000	151	13
F/A-18	2000-3000	175	13
F/A-18	3000-4000	191	11
F/A-18	4000-5000	171	16
F/A-18	5000-10000	286	18
F/A-18	10000+	278	29
F-16	**0-250**	4	10
F-16	250-500	4	10
F-16	500-1000	4	10
F-16	1000-2000	4	10
F-16	2000-3000	4	9
F-16	3000-4000	4	11
F-16	4000-5000	4	11
F-16	5000-10000	8	23

Table - 3
2004 EIS Range Flight Profile - Baker South

Baker South			
Aircraft Type	Altitude	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
F-16	10000+	16	24
C-130	**0-250**	0	n/a
C-130	250-500	0	n/a
C-130	500-1000	0	n/a
C-130	1000-2000	0	n/a
C-130	2000-3000	0	n/a
C-130	3000-4000	0	n/a
C-130	4000-5000	0	n/a
C-130	5000-10000	4	1
C-130	10000+	0	n/a
AV-8	**0-250**	28	9
AV-8	250-500	44	10
AV-8	500-1000	119	9
AV-8	1000-2000	139	16
AV-8	2000-3000	155	19
AV-8	3000-4000	139	21
AV-8	4000-5000	139	22
AV-8	5000-10000	147	26
AV-8	10000+	127	22
F-14	**0-250**	12	6
F-14	250-500	16	9
F-14	500-1000	16	22
F-14	1000-2000	24	21
F-14	2000-3000	28	20
F-14	3000-4000	28	21
F-14	4000-5000	28	19
F-14	5000-10000	28	32
F-14	10000+	28	29

Table - 4
2004 EIS Range Flight Profile - Charlie North

Charlie North			
Aircraft Type	Altitude	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
AH-1	**0-250**	36	34
AH-1	250-500	8	6
AH-1	500-1000	4	1
AH-1	1000-2000	0	n/a
AH-1	2000-3000	0	n/a
AH-1	3000-4000	0	n/a
AH-1	4000-5000	0	n/a
AH-1	5000-10000	0	n/a
AH-1	10000+	16	3
UH-1	**0-250**	12	8
UH-1	250-500	8	7
UH-1	500-1000	0	n/a
UH-1	1000-2000	0	n/a
UH-1	2000-3000	0	n/a
UH-1	3000-4000	0	n/a
UH-1	4000-5000	0	n/a
UH-1	5000-10000	0	n/a
UH-1	10000+	0	n/a
CH-46	**0-250**	28	38
CH-46	250-500	24	37
CH-46	500-1000	20	67
CH-46	1000-2000	4	32
CH-46	2000-3000	0	n/a
CH-46	3000-4000	0	n/a
CH-46	4000-5000	0	n/a
CH-46	5000-10000	4	37
CH-46	10000+	0	n/a
F/A-18	**0-250**	8	24
F/A-18	250-500	12	11
F/A-18	500-1000	12	15
F/A-18	1000-2000	32	9
F/A-18	2000-3000	20	20
F/A-18	3000-4000	24	10
F/A-18	4000-5000	16	5
F/A-18	5000-10000	52	4
F/A-18	10000+	44	13
F-16	**0-250**	0	n/a
F-16	250-500	0	n/a
F-16	500-1000	0	n/a
F-16	1000-2000	0	n/a
F-16	2000-3000	0	n/a
F-16	3000-4000	0	n/a
F-16	4000-5000	0	n/a
F-16	5000-10000	4	2

Table - 4
2004 EIS Range Flight Profile - Charlie North

Charlie North			
Aircraft Type	Altitude	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
F-16	10000+	16	6
C-130	**0-250**	0	n/a
C-130	250-500	0	n/a
C-130	500-1000	0	n/a
C-130	1000-2000	0	n/a
C-130	2000-3000	0	n/a
C-130	3000-4000	0	n/a
C-130	4000-5000	0	n/a
C-130	5000-10000	4	1
C-130	10000+	4	1
AV-8	**0-250**	4	1
AV-8	250-500	8	2
AV-8	500-1000	16	3
AV-8	1000-2000	4	3
AV-8	2000-3000	0	n/a
AV-8	3000-4000	8	1
AV-8	4000-5000	4	1
AV-8	5000-10000	4	1
AV-8	10000+	4	1

Table - 5
2004 EIS Range Flight Profile - Charlie South

Charlie South			
Aircraft Type	Altitude	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
AH-1	**0-250**	63	35
AH-1	250-500	24	18
AH-1	500-1000	8	10
AH-1	1000-2000	4	1
AH-1	2000-3000	0	n/a
AH-1	3000-4000	0	n/a
AH-1	4000-5000	0	n/a
AH-1	5000-10000	0	n/a
AH-1	10000+	16	4
UH-1	**0-250**	28	27
UH-1	250-500	36	12
UH-1	500-1000	8	2
UH-1	1000-2000	0	n/a
UH-1	2000-3000	0	n/a
UH-1	3000-4000	0	n/a
UH-1	4000-5000	0	n/a
UH-1	5000-10000	0	n/a
UH-1	10000+	0	n/a
CH-46	**0-250**	32	69
CH-46	250-500	40	53
CH-46	500-1000	28	60
CH-46	1000-2000	4	1
CH-46	2000-3000	0	n/a
CH-46	3000-4000	0	n/a
CH-46	4000-5000	4	42
CH-46	5000-10000	0	n/a
CH-46	10000+	0	n/a
F/A-18	**0-250**	12	23
F/A-18	250-500	32	7
F/A-18	500-1000	183	6
F/A-18	1000-2000	445	14
F/A-18	2000-3000	365	9
F/A-18	3000-4000	199	11
F/A-18	4000-5000	107	9
F/A-18	5000-10000	147	13
F/A-18	10000+	286	17
F-16	**0-250**	0	n/a
F-16	250-500	0	n/a
F-16	500-1000	0	n/a
F-16	1000-2000	12	1
F-16	2000-3000	4	1
F-16	3000-4000	0	n/a
F-16	4000-5000	4	1
F-16	5000-10000	12	1

Table - 5
2004 EIS Range Flight Profile - Charlie South

Charlie South			
Aircraft Type	Altitude	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
F-16	10000+	24	18
C-130	**0-250**	0	n/a
C-130	250-500	12	19
C-130	500-1000	12	54
C-130	1000-2000	12	54
C-130	2000-3000	0	n/a
C-130	3000-4000	0	n/a
C-130	4000-5000	0	n/a
C-130	5000-10000	8	25
C-130	10000+	4	2
AV-8	**0-250**	8	1
AV-8	250-500	24	3
AV-8	500-1000	44	10
AV-8	1000-2000	143	11
AV-8	2000-3000	95	8
AV-8	3000-4000	56	3
AV-8	4000-5000	56	2
AV-8	5000-10000	54	12
AV-8	10000+	32	3
F-14	**0-250**	0	n/a
F-14	250-500	4	3
F-14	500-1000	8	2
F-14	1000-2000	8	1
F-14	2000-3000	8	1
F-14	3000-4000	4	1
F-14	4000-5000	0	n/a
F-14	5000-10000	0	n/a
F-14	10000+	0	n/a

Table - 6
2004 EIS Range Flight Profile - Coso

Coso			
Aircraft Type	Altitude	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
AH-1	0-2000	12	4
AH-1	2000-3000	0	n/a
AH-1	3000-4000	0	n/a
AH-1	4000-5000	0	n/a
AH-1	5000-10000	0	n/a
AH-1	10000+	0	n/a
UH-1	0-2000	24	19
UH-1	2000-3000	4	2
UH-1	3000-4000	4	22
UH-1	4000-5000	4	24
UH-1	5000-10000	4	20
UH-1	10000+	4	2
CH-46	0-2000	0	n/a
CH-46	2000-3000	0	n/a
CH-46	3000-4000	4	1
CH-46	4000-5000	4	20
CH-46	5000-10000	4	1
CH-46	10000+	4	1
F/A-18	0-2000	63	8
F/A-18	2000-3000	56	5
F/A-18	3000-4000	56	7
F/A-18	4000-5000	52	7
F/A-18	5000-10000	135	18
F/A-18	10000+	250	19
F-16	0-2000	4	8
F-16	2000-3000	4	1
F-16	3000-4000	0	n/a
F-16	4000-5000	0	n/a
F-16	5000-10000	12	38
F-16	10000+	24	19
C-130	0-2000	0	n/a
C-130	2000-3000	0	n/a
C-130	3000-4000	4	3
C-130	4000-5000	4	2
C-130	5000-10000	4	25
C-130	10000+	4	1
AV-8	0-2000	16	19
AV-8	2000-3000	0	n/a
AV-8	3000-4000	0	n/a
AV-8	4000-5000	4	6
AV-8	5000-10000	32	20
AV-8	10000+	48	26
F-14	0-2000	4	27
F-14	2000-3000	4	26
F-14	3000-4000	4	27
F-14	4000-5000	4	28
F-14	5000-10000	8	35
F-14	10000+	4	52

Table - 7
2004 EIS Range Flight Profile - Coso Target

Coso Target			
Aircraft Type	Altitude	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
AH-1	0-2000	12	39
AH-1	2000-3000	4	2
AH-1	3000-4000	4	1
AH-1	4000-5000	0	n/a
AH-1	5000-10000	0	n/a
AH-1	10000+	0	n/a
CH-46	0-2000	4	10
CH-46	2000-3000	4	10
CH-46	3000-4000	4	39
CH-46	4000-5000	4	39
CH-46	5000-10000	4	41
CH-46	10000+	4	21
F/A-18	0-2000	111	12
F/A-18	2000-3000	111	14
F/A-18	3000-4000	115	15
F/A-18	4000-5000	119	8
F/A-18	5000-10000	147	11
F/A-18	10000+	230	14
F-16	0-2000	0	n/a
F-16	2000-3000	0	n/a
F-16	3000-4000	0	n/a
F-16	4000-5000	0	n/a
F-16	5000-10000	4	7
F-16	10000+	0	n/a
AV-8	0-2000	44	4
AV-8	2000-3000	20	13
AV-8	3000-4000	28	8
AV-8	4000-5000	16	14
AV-8	5000-10000	48	13
AV-8	10000+	48	17

Table - 8
2004 EIS Range Flight Profile - Geothermal

Geothermal			
Aircraft Type	Altitude	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
AH-1	0-2000	0	n/a
AH-1	2000-3000	0	n/a
AH-1	3000-4000	0	n/a
AH-1	4000-5000	0	n/a
AH-1	5000-10000	0	n/a
AH-1	10000+	16	1
UH-1	0-2000	4	1
UH-1	2000-3000	0	n/a
UH-1	3000-4000	0	n/a
UH-1	4000-5000	0	n/a
UH-1	5000-10000	4	1
UH-1	10000+	0	n/a
CH-46	0-2000	0	n/a
CH-46	2000-3000	0	n/a
CH-46	3000-4000	4	19
CH-46	4000-5000	4	19
CH-46	5000-10000	0	n/a
CH-46	10000+	0	n/a
F/A-18	0-2000	4	1
F/A-18	2000-3000	4	7
F/A-18	3000-4000	4	39
F/A-18	4000-5000	4	24
F/A-18	5000-10000	12	1
F/A-18	10000+	48	1
F-16	0-2000	0	n/a
F-16	2000-3000	0	n/a
F-16	3000-4000	0	n/a
F-16	4000-5000	4	1
F-16	5000-10000	4	1
F-16	10000+	4	1
AV-8	0-2000	8	7
AV-8	2000-3000	0	n/a
AV-8	3000-4000	0	n/a
AV-8	4000-5000	0	n/a
AV-8	5000-10000	4	1
AV-8	10000+	12	27

Table - 9
2004 EIS Range Flight Profile - George

George			
Aircraft Type	Altitude	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
AH-1	0-2000	20	40
AH-1	2000-3000	0	n/a
AH-1	3000-4000	0	n/a
AH-1	4000-5000	0	n/a
AH-1	5000-10000	0	n/a
AH-1	10000+	16	3
UH-1	0-2000	28	17
UH-1	2000-3000	0	n/a
UH-1	3000-4000	0	n/a
UH-1	4000-5000	0	n/a
UH-1	5000-10000	0	n/a
UH-1	10000+	0	n/a
CH-46	0-2000	4	2
CH-46	2000-3000	4	1
CH-46	3000-4000	4	13
CH-46	4000-5000	0	n/a
CH-46	5000-10000	4	31
CH-46	10000+	0	n/a
F/A-18	0-2000	187	2
F/A-18	2000-3000	159	6
F/A-18	3000-4000	187	12
F/A-18	4000-5000	171	19
F/A-18	5000-10000	226	26
F/A-18	10000+	282	31
F-16	0-2000	4	14
F-16	2000-3000	12	5
F-16	3000-4000	12	2
F-16	4000-5000	4	1
F-16	5000-10000	16	44
F-16	10000+	20	45
C-130	0-2000	4	10
C-130	2000-3000	8	1
C-130	3000-4000	12	3
C-130	4000-5000	12	5
C-130	5000-10000	20	20
C-130	10000+	4	41
AV-8	0-2000	32	21
AV-8	2000-3000	24	23
AV-8	3000-4000	24	24
AV-8	4000-5000	20	33
AV-8	5000-10000	44	25
AV-8	10000+	32	24
F-14	0-2000	0	n/a
F-14	2000-3000	4	1
F-14	3000-4000	4	1
F-14	4000-5000	4	54
F-14	5000-10000	4	72
F-14	10000+	8	52

Table - 10
2004 EIS Range Flight Profile - Main Base

Main Base			
Aircraft Type	Altitude	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
AH-1	0-2000	0	n/a
AH-1	2000-3000	4	1
AH-1	3000-4000	0	n/a
AH-1	4000-5000	0	n/a
AH-1	5000-10000	16	1
AH-1	10000+	16	4
F/A-18	0-2000	0	n/a
F/A-18	2000-3000	187	2
F/A-18	3000-4000	52	6
F/A-18	4000-5000	32	4
F/A-18	5000-10000	107	11
F/A-18	10000+	159	23
F-16	0-2000	0	n/a
F-16	2000-3000	0	n/a
F-16	3000-4000	0	n/a
F-16	4000-5000	0	n/a
F-16	5000-10000	0	n/a
F-16	10000+	16	36
C-130	0-2000	0	n/a
C-130	2000-3000	4	1
C-130	3000-4000	4	1
C-130	4000-5000	4	1
C-130	5000-10000	16	30
C-130	10000+	4	47
AV-8	0-2000	0	n/a
AV-8	2000-3000	40	5
AV-8	3000-4000	24	1
AV-8	4000-5000	4	1
AV-8	5000-10000	16	3
AV-8	10000+	8	18
F-14	0-2000	0	n/a
F-14	2000-3000	0	n/a
F-14	3000-4000	0	n/a
F-14	4000-5000	0	n/a
F-14	5000-10000	4	1
F-14	10000+	4	87

Table - 11
2004 EIS Range Flight Profile - Propulsion

Propulsion			
Aircraft Type	Altitude	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
AH-1	0-2000	12	1
AH-1	2000-3000	0	n/a
AH-1	3000-4000	0	n/a
AH-1	4000-5000	0	n/a
AH-1	5000-10000	0	n/a
AH-1	10000+	0	n/a
UH-1	0-2000	36	3
UH-1	2000-3000	0	n/a
UH-1	3000-4000	0	n/a
UH-1	4000-5000	0	n/a
UH-1	5000-10000	0	n/a
UH-1	10000+	0	n/a
F/A-18	0-2000	0	n/a
F/A-18	2000-3000	20	1
F/A-18	3000-4000	12	5
F/A-18	4000-5000	8	1
F/A-18	5000-10000	56	15
F/A-18	10000+	139	31
F-16	0-2000	0	n/a
F-16	2000-3000	0	n/a
F-16	3000-4000	0	n/a
F-16	4000-5000	0	n/a
F-16	5000-10000	0	n/a
F-16	10000+	4	51
C-130	0-2000	0	n/a
C-130	2000-3000	4	1
C-130	3000-4000	4	1
C-130	4000-5000	0	n/a
C-130	5000-10000	8	6
C-130	10000+	0	n/a
AV-8	0-2000	8	1
AV-8	2000-3000	8	1
AV-8	3000-4000	8	1
AV-8	4000-5000	8	1
AV-8	5000-10000	8	19
AV-8	10000+	12	44
F-14	0-2000	0	n/a
F-14	2000-3000	0	n/a
F-14	3000-4000	0	n/a
F-14	4000-5000	0	n/a
F-14	5000-10000	4	71
F-14	10000+	8	64

Table - 12
2004 EIS Range Flight Profile - Mojave B North

Mojave B North			
Aircraft Type	Altitude	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
UH-1	0-2000	8	4
UH-1	2000-3000	12	13
UH-1	3000-4000	8	2
UH-1	4000-5000	0	n/a
UH-1	5000-10000	0	n/a
UH-1	10000+	0	n/a
F/A-18	0-2000	111	11
F/A-18	2000-3000	135	13
F/A-18	3000-4000	131	13
F/A-18	4000-5000	123	14
F/A-18	5000-10000	298	16
F/A-18	10000+	421	15
F-16	0-2000	0	n/a
F-16	2000-3000	0	n/a
F-16	3000-4000	0	n/a
F-16	4000-5000	0	n/a
F-16	5000-10000	20	6
F-16	10000+	20	26
AV-8	0-2000	0	n/a
AV-8	2000-3000	4	1
AV-8	3000-4000	4	1
AV-8	4000-5000	4	1
AV-8	5000-10000	20	21
AV-8	10000+	24	40
F-14	0-2000	0	n/a
F-14	2000-3000	0	n/a
F-14	3000-4000	4	1
F-14	4000-5000	4	11
F-14	5000-10000	8	11
F-14	10000+	8	7

Table - 13
2004 EIS Range Flight Profile - Mojave B South

Mojave B South			
Aircraft Type	Altitude	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
AH-1	0-2000	0	n/a
AH-1	2000-3000	4	8
AH-1	3000-4000	4	8
AH-1	4000-5000	0	n/a
AH-1	5000-10000	4	11
AH-1	10000+	4	26
UH-1	0-2000	4	53
UH-1	2000-3000	4	48
UH-1	3000-4000	4	47
UH-1	4000-5000	0	n/a
UH-1	5000-10000	0	n/a
UH-1	10000+	0	n/a
CH-46	0-2000	0	n/a
CH-46	2000-3000	4	4
CH-46	3000-4000	4	1
CH-46	4000-5000	4	1
CH-46	5000-10000	4	1
CH-46	10000+	8	13
F/A-18	0-2000	103	13
F/A-18	2000-3000	131	6
F/A-18	3000-4000	95	3
F/A-18	4000-5000	127	2
F/A-18	5000-10000	223	6
F/A-18	10000+	401	11
F-16	0-2000	8	1
F-16	2000-3000	0	n/a
F-16	3000-4000	4	1
F-16	4000-5000	8	6
F-16	5000-10000	24	6
F-16	10000+	16	4
C-130	0-2000	4	1
C-130	2000-3000	4	7
C-130	3000-4000	4	1
C-130	4000-5000	0	n/a
C-130	5000-10000	0	n/a
C-130	10000+	0	n/a
AV-8	0-2000	0	n/a
AV-8	2000-3000	0	n/a
AV-8	3000-4000	4	1
AV-8	4000-5000	12	7
AV-8	5000-10000	28	8
AV-8	10000+	40	28
F-14	0-2000	0	n/a
F-14	2000-3000	0	n/a
F-14	3000-4000	0	n/a
F-14	4000-5000	4	1
F-14	5000-10000	0	n/a
F-14	10000+	0	n/a

Table - 14
2004 EIS Range Flight Profile - Randburg Wash

Randburg Wash			
Aircraft Type	Altitude	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
AH-1	0-2000	4	1
AH-1	2000-3000	0	n/a
AH-1	3000-4000	0	n/a
AH-1	4000-5000	0	n/a
AH-1	5000-10000	0	n/a
AH-1	10000+	4	1
UH-1	0-2000	12	35
UH-1	2000-3000	4	48
UH-1	3000-4000	4	54
UH-1	4000-5000	4	3
UH-1	5000-10000	0	n/a
UH-1	10000+	0	n/a
CH-46	0-2000	0	n/a
CH-46	2000-3000	0	n/a
CH-46	3000-4000	0	n/a
CH-46	4000-5000	0	n/a
CH-46	5000-10000	0	n/a
CH-46	10000+	4	1
F/A-18	0-2000	131	12
F/A-18	2000-3000	195	8
F/A-18	3000-4000	210	10
F/A-18	4000-5000	179	11
F/A-18	5000-10000	306	14
F/A-18	10000+	453	15
F-16	0-2000	16	1
F-16	2000-3000	16	1
F-16	3000-4000	16	1
F-16	4000-5000	16	1
F-16	5000-10000	20	16
F-16	10000+	24	25
C-130	0-2000	8	6
C-130	2000-3000	8	26
C-130	3000-4000	8	29
C-130	4000-5000	8	31
C-130	5000-10000	4	5
C-130	10000+	4	1
AV-8	0-2000	12	12
AV-8	2000-3000	8	1
AV-8	3000-4000	12	14
AV-8	4000-5000	20	6
AV-8	5000-10000	28	14
AV-8	10000+	56	27

Table - 15
2004 EIS Range Flight Profile - Superior Valley

Superior Valley			
Aircraft Type	Altitude	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
AH-1	0-2000	0	n/a
AH-1	2000-3000	4	5
AH-1	3000-4000	0	n/a
AH-1	4000-5000	0	n/a
AH-1	5000-10000	4	12
AH-1	10000+	4	27
CH-46	0-2000	0	n/a
CH-46	2000-3000	0	n/a
CH-46	3000-4000	0	n/a
CH-46	4000-5000	0	n/a
CH-46	5000-10000	8	6
CH-46	10000+	8	13
F/A-18	0-2000	16	11
F/A-18	2000-3000	64	10
F/A-18	3000-4000	115	8
F/A-18	4000-5000	151	6
F/A-18	5000-10000	223	9
F/A-18	10000+	306	11
F-16	0-2000	0	n/a
F-16	2000-3000	28	14
F-16	3000-4000	36	17
F-16	4000-5000	36	18
F-16	5000-10000	28	24
F-16	10000+	4	1
C-130	0-2000	0	n/a
C-130	2000-3000	4	13
C-130	3000-4000	4	18
C-130	4000-5000	4	18
C-130	5000-10000	4	11
C-130	10000+	0	n/a
AV-8	0-2000	0	n/a
AV-8	2000-3000	8	17
AV-8	3000-4000	24	15
AV-8	4000-5000	32	15
AV-8	5000-10000	36	17
AV-8	10000+	36	13

Range Flight Emission Summary – North Range

Table - 16
Baseline
Summary of Estimated 2004 EIS Range Flight Sorties for Sub-Ranges within North Range

Aircraft Type	Altitude	Airport Lake		Baker North		Baker South	
		Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
AH-1	0-3000	16	24.0	36	15.2	20	17.0
	3000+	16	-	16	-	0	-
UH-1	0-3000	24	3.0	16	10.0	32	1.4
	3000+	0	-	0	-	0	-
CH-46	0-3000	0	n/a	44	36.1	24	9.7
	3000+	12	-	20	-	20	-
F/A-18	0-3000	116	17.8	159	10.6	461	12.8
	3000+	417	-	485	-	926	-
F-16	0-3000	8	7.0	0	n/a	20	9.8
	3000+	32	-	24	-	32	-
C-130	0-3000	0	n/a	0	n/a	0	n/a
	3000+	4	-	4	-	4	-
AV-8	0-3000	24	10.5	56	7.3	485	14.3
	3000+	72	-	167	-	552	-
F-14	0-3000	0	n/a	16	4.5	96	17.0
	3000+	4	-	32	-	112	-
	Total	745	-	1075	-	2784	-

Notes:

[1] Naval Air Warfare Center Weapons Division Operational Requirements Document

[2] Emission Factors obtained from the following:

Aircraft	Document
AH-1	AESO Memorandum Report No. 9824 Revision B
UH-1	AESO Memorandum Report No. 9904 Revision A
CH-46	AESO Memorandum Report No. 9816 Revision F
F/A-18	AESO Memorandum Report No. 9933 Revision D, circle emission factor
F-16	U.S. Air Force Air Conformity Applicability Model Version 4.5, Technical Documentation. Intermediate emission factor for F110-GE-129 engine.
C-130	AESO Memorandum Report No. 2000-10 Revision B, circle emission factor
AV-8	AESO Memorandum Report No. 9963 Revision C; Day attack.
F-14	AESO Memorandum Report No. 9945 Revision C, circle emission factor

Table - 17
Baseline
Summary of Estimated 2004 EIS Range Flight Sorties for Sub-Ranges within North Range

Aircraft Type	Altitude	Charlie North		Charlie South		Coso		Coso Target	
		Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
AH-1	0-3000	48	26.6	99	27.5	12	4.0	16	29.8
	3000+	16	-	16	-	0	-	4	-
UH-1	0-3000	20	7.6	72	16.7	28	16.6	-	-
	3000+	0	-	0	-	16	-	-	-
CH-46	0-3000	76	45.0	104	57.8	0	n/a	8	10.0
	3000+	4	-	4	-	16	-	16	-
F/A-18	0-3000	84	14.2	1037	10.7	119	6.6	222	13.0
	3000+	136	-	739	-	493	-	611	-
F-16	0-3000	0	n/a	16	1.0	8	4.5	0	n/a
	3000+	20	-	40	-	36	-	4	-
C-130	0-3000	0	n/a	36	42.3	0	n/a	-	-
	3000+	8	-	12	-	16	-	-	-
AV-8	0-3000	32	2.5	314	9.1	16	19.0	64	6.8
	3000+	20	-	198	-	84	-	140	-
F-14	0-3000	-	-	28	7.4	8	26.5	-	-
	3000+	-	-	4	-	20	-	-	-
Total		464	-	2719	-	872	-	1085	-

Notes:

[1] Naval Air Warfare Center Weapons Division Operational Requirements Document

[2] Emission Factors obtained from the following:

Aircraft	Document
AH-1	AESO Memorandum Report No. 9824 Revision B
UH-1	AESO Memorandum Report No. 9904 Revision A
CH-46	AESO Memorandum Report No. 9816 Revision F
F/A-18	AESO Memorandum Report No. 9933 Revision D, circle emission factor
F-16	U.S. Air Force Air Conformity Applicability Model Version 4.5, Technical Documentation. Intermediate emission factor for F110-GE-129 engine.
C-130	AESO Memorandum Report No. 2000-10 Revision B, circle emission factor
AV-8	AESO Memorandum Report No. 9963 Revision C; Day attack.
F-14	AESO Memorandum Report No. 9945 Revision C, circle emission factor

Table - 18
Baseline
Summary of Estimated 2004 EIS Range Flight Sorties for Sub-Ranges within North Range

Aircraft Type	Altitude	Geothermal		George		Main Base		Propulsion	
		Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
AH-1	0-3000	0	n/a	20	40.0	4	1.0	12	1.0
	3000+	16	-	16	-	32	-	0	-
UH-1	0-3000	4	1.0	28	17.0	-	-	36	3.0
	3000+	4	-	0	-	-	-	0	-
CH-46	0-3000	0	n/a	8	1.5	-	-	-	-
	3000+	8	-	8	-	-	-	-	-
F/A-18	0-3000	8	4.0	346	3.8	187	2.0	20	1.0
	3000+	68	-	866	-	350	-	215	-
F-16	0-3000	0	n/a	16	7.3	0	n/a	0	n/a
	3000+	12	-	52	-	16	-	4	-
C-130	0-3000	-	-	12	4.0	4	1.0	4	1.0
	3000+	-	-	48	-	28	-	12	-
AV-8	0-3000	8	7.0	56	21.9	40	5.0	16	1.0
	3000+	16	-	120	-	52	-	36	-
F-14	0-3000	-	-	4	1.0	0	n/a	0	n/a
	3000+	-	-	20	-	8	-	12	-
Total		144	-	1620	-	721	-	367	

Notes:

[1] Naval Air Warfare Center Weapons Division Operational Requirements Document

[2] Emission Factors obtained from the following:

Aircraft	Document
AH-1	AESO Memorandum Report No. 9824 Revision B
UH-1	AESO Memorandum Report No. 9904 Revision A
CH-46	AESO Memorandum Report No. 9816 Revision F
F/A-18	AESO Memorandum Report No. 9933 Revision D, circle emission factor
F-16	U.S. Air Force Air Conformity Applicability Model Version 4.5, Technical Documentation. Intermediate emission factor for F110-GE-129 engine.
C-130	AESO Memorandum Report No. 2000-10 Revision B, circle emission factor
AV-8	AESO Memorandum Report No. 9963 Revision C; Day attack.
F-14	AESO Memorandum Report No. 9945 Revision C, circle emission factor

Table - 19
Baseline
Range Flight Emission Summary - North Range

Aircraft Type	Altitude	Total North Range		2014 Baseline Annualized Operations	Hours in Flight	Emissions Factors (lb/hr)						Emissions (TPY)					
		2004 Annualized Operations	Avg. Time in Area (min)			$CO2^2$	CO^2	NOX^2	HC^2	$SO2^2$	$PM10^2$	CO2	CO	NOX	HC	SO2	PM10
AH-1	0-3000	283	23.4	86	33.5	2734.47	8.96	4.72	0.48	0.34	3.57	45.8522	0.1502	0.0791	0.0080	0.0057	0.0599
	3000+	132	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UH-1	0-3000	260	10.3	79	13.6	-	0.70	4.01	0.09	0.28	2.91		0.0048	0.0273	0.0006	0.0019	0.0198
	3000+	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CH-46	0-3000	264	43.0	80	57.6	3557	22.11	4.41	3.84	0.45	1.99	102.38	0.64	0.13	0.11	0.01	0.06
	3000+	108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F/A-18	0-3000	2759	9.9	840	139.0	20929.94	16.19	44.73	2.92	2.65	42.20	1454.33	1.13	3.11	0.20	0.18	2.93
	3000+	5306	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F-16	0-3000	68	6.2	21	2.1	-	17.70	124.94	1.88	9.39	0.87		0.02	0.13	0.00	0.01	0.00
	3000+	272	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C-130	0-3000	56	28.2	17	8.0	14403.20	7.75	40.27	0.09	1.79	7.08	57.74	0.03	0.16	0.00	0.01	0.03
	3000+	136	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AV-8	0-3000	1111	11.5	338	64.8	13499.30	69.01	25.45	3.80	1.73	22.86	437.07	2.23	0.82	0.12	0.06	0.74
	3000+	1457	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F-14	0-3000	152	14.0	46	10.8	-	42.65	32.34	17.55	2.01	39.94		0.23	0.17	0.09	0.01	0.22
	3000+	212	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total		12596		1508							Total	**2097.37**	**4.43**	**4.63**	**0.54**	**0.29**	**4.05**

Total 2004 EIS Sorties:	12596
Total Baseline Sorties[1]:	3835
Total 2004 Below 3000 ft:	4953
Total Baseline Below 3000 ft:	1508

Notes:

[1] Naval Air Warfare Center Weapons Division Operational Requirements Document

[2] Emission Factors obtained from the following:

Aircraft	Document
AH-1	AESO Memorandum Report No. 9824 Revision B
UH-1	AESO Memorandum Report No. 9904 Revision A
CH-46	AESO Memorandum Report No. 9816 Revision F
F/A-18	AESO Memorandum Report No. 9933 Revision D, circle emission factor
F-16	U.S. Air Force Air Conformity Applicability Model Version 4.5, Technical Documentation. Intermediate emission factor for F110-GE-129 engine.
C-130	AESO Memorandum Report No. 2000-10 Revision B, circle emission factor
AV-8	AESO Memorandum Report No. 9963 Revision C; Day attack.
F-14	AESO Memorandum Report No. 9945 Revision C, circle emission factor

Table - 20
Propsed Condition
Range Flight Emission Summary - North Range

Aircraft Type	Altitude	Total North Range		Future Proposed Condition Annualized Operations	Hours in Flight	Emissions Factors (lb/hr)						Emissions (TPY)					
		2004 Proposed Annualized Operations	Avg. Time in Area (min)			$CO2^2$	CO^2	NOX^2	HC^2	$SO2^2$	$PM10^2$	CO2	CO	NOX	HC	SO2	PM10
AH-1	0-3000	353.75	23.4	108	41.9	2734.47	8.96	4.72	0.48	0.34	3.57	57.3153	0.1878	0.0989	0.0101	0.0071	0.0748
	3000+	165	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UH-1	0-3000	325	10.3	99	17.0	-	0.70	4.01	0.09	0.28	2.91		0.0060	0.0341	0.0008	0.0024	0.0248
	3000+	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CH-46	0-3000	330	43.0	100	72.0	3557	22.11	4.41	3.84	0.45	1.99	127.97	0.80	0.16	0.14	0.02	0.07
	3000+	135	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F-35[3]	0-3000	3448.75	9.9	1050	173.7	19645.66	7.93	43.48	0.47	2.42	30.22	1706.37	0.69	3.78	0.04	0.21	2.62
	3000+	6632.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F-16	0-3000	85	6.2	26	2.7	-	17.70	124.94	1.88	9.39	0.87		0.02	0.17	0.00	0.01	0.00
	3000+	340	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C-130	0-3000	70	28.2	21	10.0	14403.20	7.75	40.27	0.09	1.79	7.08	72.17	0.04	0.20	0.00	0.01	0.04
	3000+	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AV-8	0-3000	1388.75	11.5	423	80.9	13499.30	69.01	25.45	3.80	1.73	22.86	546.33	2.79	1.03	0.15	0.07	0.93
	3000+	1821.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F-14	0-3000	190	14.0	58	13.5	-	42.65	32.34	17.55	2.01	39.94		0.29	0.22	0.12	0.01	0.27
	3000+	265	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	15745		1885							Total	**2510.16**	**4.82**	**5.68**	**0.46**	**0.34**	**4.03**

Total 2004 EIS Sorties:	15745
Total Baseline Sorties[1]:	3835
Total 2004 Below 3000 ft:	6191.25
Total Baseline Below 3000 ft:	1508
Total Proposed Below 3000 ft:	1885

Notes:

[1] Naval Air Warfare Center Weapons Division Operational Requirements Document

[2] Emission Factors obtained from the following:

Aircraft	Document
AH-1	AESO Memorandum Report No. 9824 Revision B
UH-1	AESO Memorandum Report No. 9904 Revision A
CH-46	AESO Memorandum Report No. 9816 Revision F
F-35	F-35-FOUO - TIM Spreadsheet Model default.xls, CV Standard - Fly from 10 nm IP to initial
F-16	U.S. Air Force Air Conformity Applicability Model Version 4.5, Technical Documentation. Intermediate emission factor for F110-GE-129 engine.
C-130	AESO Memorandum Report No. 2000-10 Revision B, circle emission factor
AV-8	AESO Memorandum Report No. 9963 Revision C; Day attack.
F-14	AESO Memorandum Report No. 9945 Revision C, circle emission factor

[3] All F/A-18 operations provided in the Baseline Alternative would be zeroed out in the Proposed Action range flight operations

[4] For the North Range and Echo Range, the number of F-35 operations in the Proposed Action alternative would be 25% greater than the F/A-18 values provided in the Baseline Alternative for these ranges. This increase in operations is also applied to other aircraft and is somewhat in sync with values provided for range operations in the R-2508 as provided in F-35C West Coast Home basing EIS (Table ES-5)

Range Flight Emission Summary – Echo Range

Table - 21
Baseline
Summary of Estimated 2004 EIS Range Flight Sorties for Sub-Ranges within Echo Range

Aircraft Type	Altitude	Mojave B North		Mojave B South		Randsburg Wash	
		Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)	Annualized Operations (Day , Eve, Night)	Avg. Time in Area (min)
AH-1	0-3000			4	8	4	1
	3000+			12		4	
UH-1	0-3000	20	9.4	8	50.5	16	38.25
	3000+	8		4		8	
CH-46	0-3000			4	4	0	n/a
	3000+			20		4	
F/A-18	0-3000	246	12.097561	234	9.08119658	326	9.607361963
	3000+	973		846		1148	
F-16	0-3000	0	n/a	8	1	32	1
	3000+	40		52		76	
C-130	0-3000			8	4	16	16
	3000+			4		24	
AV-8	0-3000	4	1	0	n/a	20	7.6
	3000+	52		84		116	
F-14	0-3000	0	n/a	0	n/a		
	3000+	24		4			
Total		1367		1292		1794	

Notes:

[1] Naval Air Warfare Center Weapons Division Operational Requirements Document

[2] Emission Factors obtained from the following:

Aircraft	Document
AH-1	AESO Memorandum Report No. 9824 Revision B
UH-1	AESO Memorandum Report No. 9904 Revision A
CH-46	AESO Memorandum Report No. 9816 Revision F
F/A-18	AESO Memorandum Report No. 9933 Revision D, circle emission factor
F-16	U.S. Air Force Air Conformity Applicability Model Version 4.5, Technical Documentation. Intermediate emission factor for F110-GE-129 engine.
C-130	AESO Memorandum Report No. 2000-10 Revision B, circle emission factor
AV-8	AESO Memorandum Report No. 9963 Revision C; Day attack.
F-14	AESO Memorandum Report No. 9945 Revision C, circle emission factor

Table - 22
Baseline
Range Flight Emission Summary - Echo Range

Aircraft Type	Altitude	Total Echo Range		2014 Baseline Annualized Operations	Hours in Flight	Emissions Factors (lb/hr)						Emissions (TPY)					
		2004 Annualized Operations	Avg. Time in Area (min)			CO_2[2]	CO[2]	NO_X[2]	HC[2]	SO_2[2]	PM_{10}[2]	CO_2	CO	NOX	HC	SO2	PM10
AH-1	0-3000	8	4.5	5.10	0.38	2734.47	8.96	4.72	0.48	0.34	3.57	0.5230	0.0017	0.0009	0.00009	0.0001	0.0007
	3000+	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UH-1	0-3000	44	27.36364	28.05	12.79	-	0.70	4.01	0.09	0.28	2.91		0.06	0.03	0.003	0.002	0.02
	3000+	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CH-46	0-3000	4	4	2.55	0.17	3557	22.11	4.41	3.84	0.45	1.99	0.30	0.0019	0.0004	0.0003	0.00004	0.0002
	3000+	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F/A-18	0-3000	806	10.21464	513.86	87.48	20929.94	16.19	44.73	2.92	2.65	42.20	915.50	0.71	1.96	0.13	0.12	1.85
	3000+	2967	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F-16	0-3000	40	1	25.50	0.43	-	17.70	124.94	1.88	9.39	0.87		0.004	0.03	0.0004	0.002	0.0002
	3000+	168	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C-130	0-3000	24	12	15.30	3.06	14403.20	7.75	40.27	0.09	1.79	7.08	22.04	0.012	0.06	0.000	0.003	0.01
	3000+	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AV-8	0-3000	24	6.5	15.30	1.66	13499.30	69.01	25.45	3.80	1.73	22.86	11.19	0.06	0.02	0.003	0.001	0.02
	3000+	252	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F-14	0-3000	0	0	0.00	0.00	-	42.65	32.34	17.55	2.01	39.94		0.00	0.00	0.00	0.00	0.00
	3000+	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total		4453		606							Total	949.55	0.84	2.10	0.13	0.12	1.90

Total 2004 EIS Sorties:	4453
Total Baseline Sorties[1]:	2839
Total 2004 Below 3000 ft:	950
Total Baseline Below 3000 ft:	606

Notes:

[1] Naval Air Warfare Center Weapons Division Operational Requirements Document

[2] Emission Factors obtained from the following:

Aircraft	Document
AH-1	AESO Memorandum Report No. 9824 Revision B
UH-1	AESO Memorandum Report No. 9904 Revision A
CH-46	AESO Memorandum Report No. 9816 Revision F
F/A-18	AESO Memorandum Report No. 9933 Revision D, circle emission factor
F-16	U.S. Air Force Air Conformity Applicability Model Version 4.5, Technical Documentation. Intermediate emission factor for F110-GE-129 engine.
C-130	AESO Memorandum Report No. 2000-10 Revision B, circle emission factor
AV-8	AESO Memorandum Report No. 9963 Revision C; Day attack.
F-14	AESO Memorandum Report No. 9945 Revision C, circle emission factor

Table - 20
Proposed Condition
Range Flight Emission Summary - Echo Range

Aircraft Type	Altitude	Total Echo Range		Future Proposed Condition Annualized Operations	Hours in Flight	Emissions Factors (lb/hr)						Emissions (TPY)					
		2004 Annualized Operations	Avg. Time in Area (min)			CO_2[2]	CO[2]	NO_X[2]	HC[2]	SO_2[2]	PM_{10}[2]	CO2	CO	NOX	HC	SO2	PM10
AH-1	0-3000	10	4.5	6.38	0.48	2734.47	8.96	4.72	0.48	0.34	3.57	0.6538	0.0021	0.0011	0.00011	0.0001	0.0009
	3000+	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UH-1	0-3000	55	27.36364	35.07	15.99	-	0.70	4.01	0.09	0.28	2.91		0.07	0.04	0.004	0.003	0.03
	3000+	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CH-46	0-3000	5	4	3.19	0.21	3557	22.11	4.41	3.84	0.45	1.99	0.38	0.0023	0.0005	0.0004	0.00005	0.0002
	3000+	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F-35[3]	0-3000	1007.5	10.21464	642.33	109.35	19645.66	7.93	43.48	0.47	2.42	30.22	1074.15	0.43	2.38	0.03	0.13	1.65
	3000+	3708.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F-16	0-3000	50	1	31.88	0.53	-	17.70	124.94	1.88	9.39	0.87		0.005	0.03	0.0005	0.002	0.0002
	3000+	210	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C-130	0-3000	30	12	19.13	3.83	14403.20	7.75	40.27	0.09	1.79	7.08	27.55	0.015	0.08	0.000	0.003	0.01
	3000+	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AV-8	0-3000	30	6.5	19.13	2.07	13499.30	69.01	25.45	3.80	1.73	22.86	13.99	0.07	0.03	0.004	0.002	0.02
	3000+	315	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F-14	0-3000	0	0	0.00	0.00	-	42.65	32.34	17.55	2.01	39.94		0.00	0.00	0.00	0.00	0.00
	3000+	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	5566.25		757							Total	1116.72	0.60	2.55	0.03	0.14	1.72

Total 2004 EIS Sorties:	5566.25
Total Baseline Sorties[1]:	2839
Total 2004 Below 3000 ft:	1187.5
Total Baseline Below 3000 ft:	606
Total Proposed Below 3000 ft:	757

Notes:

[1] Naval Air Warfare Center Weapons Division Operational Requirements Document

[2] Emission Factors obtained from the following:

Aircraft	Document
AH-1	AESO Memorandum Report No. 9824 Revision B
UH-1	AESO Memorandum Report No. 9904 Revision A
CH-46	AESO Memorandum Report No. 9816 Revision F
F-35	F-35-FOUO - TIM Spreadsheet Model default.xls, CV Standard - Fly from 10 nm IP to initial
F-16	U.S. Air Force Air Conformity Applicability Model Version 4.5, Technical Documentation. Intermediate emission factor for F110-GE-129 engine.
C-130	AESO Memorandum Report No. 2000-10 Revision B, circle emission factor
AV-8	AESO Memorandum Report No. 9963 Revision C; Day attack.
F-14	AESO Memorandum Report No. 9945 Revision C, circle emission factor

[3] All F/A-18 operations provided in the Baseline Alternative would be zeroed out in the Proposed Action range flight operations

[4] For the North Range and Echo Range, the number of F-35 operations in the Proposed Action alternative would be 25% greater than the F/A-18 values provided in the Baseline Alternative for these ranges. This increase in operations is also applied to other aircraft and is somewhat in sync with values provided for range operations in the R-2508 as provided in F-35C West Coast Home basing EIS (Table ES-5)

Range Flight Emission Summary – Superior Valley

Table - нп
Baseline
Range Flight Emission Summary - Superior Valley

Aircraft Type	Altitude	Superior Valley Annualized Operations (Day , Eve, Night)	Superior Valley Avg. Time in Area (min)	2014 Baseline Annualized Operations	Hours in Flight	Emissions Factors (lb/hr) CO_2[2]	CO[2]	NO_X[2]	HC[2]	SO_2[2]	PM_{10}[2]	Emissions (TPY) CO_2	CO	NO_X	HC	SO_2	PM_{10}
AH-1	0-3000	4	5	11	0.89	2734.47	8.96	4.72	0.48	0.34	3.57	1.211353	0.003969	0.002091	0.000213	0.000151	0.001581
	3000+	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CH-46	0-3000	0		0	0	3557	22.11	4.41	3.84	0.45	1.99	0	0	0	0	0	0
	3000+	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F/A-18	0-3000	80	10.2	213	36.15	20929.94	16.19	44.73	2.92	2.65	42.20	378.2907	0.292654	0.808395	0.052774	0.047976	0.762818
	3000+	795	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F-16	0-3000	28	14	74	17.37	-	17.70	124.94	1.88	9.39	0.87		0.153683	1.084813	0.016323	0.08153	0.007554
	3000+	104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C-130	0-3000	4	13	11	2.30	14403.20	7.75	40.27	0.09	1.79	7.08	16.58936	0.008927	0.046382	0.000103	0.002064	0.008152
	3000+	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AV-8	0-3000	8	17	21	6.02	13499.3	69.01	25.45	3.8	1.73	22.86	40.6647	0.207883	0.076664	0.011447	0.005211	0.068862
	3000+	128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	1187		330							Total	436.7561	0.667116	2.018346	0.08086	0.136932	0.848968

Total 2004 EIS Sorties:	1187
Total Baseline Sorties[1]:	3155
Total 2004 Below 3000 ft:	124
Total Baseline Below 3000 ft:	329.59

Notes:

[1] Naval Air Warfare Center Weapons Division Operational Requirements Document

[2] Emission Factors obtained from the following:

Aircraft	Document
AH-1	AESO Memorandum Report No. 9824 Revision B
CH-46	AESO Memorandum Report No. 9816 Revision F
F/A-18	AESO Memorandum Report No. 9933 Revision D, circle emission factor
F-16	U.S. Air Force Air Conformity Applicability Model Version 4.5, Technical Documentation. Intermediate emission factor for F110-GE-129 engine.
C-130	AESO Memorandum Report No. 2000-10 Revision B, circle emission factor
AV-8	AESO Memorandum Report No. 9963 Revision C; Day attack.
F-14	AESO Memorandum Report No. 9945 Revision C, circle emission factor

Table - нр
Proposed Condition
Range Flight Emission Summary - Superior Valley

Aircraft Type	Altitude	Superior Valley			Future Proposed Condition Annualized Operations	Hours in Flight	Emissions Factors (lb/hr)						Emissions (TPY)					
		Baseline Annualized Operations (Day , Eve, Night)	Proposed Annualized Operations (Day , Eve, Night)[4]	Avg. Time in Area (min)			$CO2^2$	CO^2	NOX^2	HC^2	$SO2^2$	$PM10^2$	CO2	CO	NOX	HC	SO2	PM10
AH-1	0-3000	4	4.2	5	11	0.93	2734.47	8.96	4.72	0.48	0.34	3.57	1.27192	0.004168	0.002195	0.000223	0.000158	0.001661
	3000+	8	8.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CH-46	0-3000	0	0		0	0	3557	22.11	4.41	3.84	0.45	1.99	0	0	0	0	0	0
	3000+	16	16.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F-35[3]	0-3000	80	84	10.2	223	37.96	19645.66	7.93	43.48	0.47	2.42	30.22	372.8323	0.150558	0.825196	0.00885	0.045972	0.5735
	3000+	795	834.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F-16	0-3000	28	29.4	14	78	18.23	-	17.70	124.94	1.88	9.39	0.87		0.161367	1.139054	0.01714	0.085607	0.007932
	3000+	104	109.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C-130	0-3000	4	4.2	13	11	2.42	14403.20	7.75	40.27	0.09	1.79	7.08	17.41883	0.009373	0.048701	0.000108	0.002167	0.00856
	3000+	12	12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AV-8	0-3000	8	8.4	17	22	6.33	13499.3	69.01	25.45	3.8	1.73	22.86	42.69793	0.218277	0.080498	0.012019	0.005472	0.072306
	3000+	128	134.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	1187	1246.35		346							Total	434.221	0.543743	2.095645	0.03834	0.139376	0.663958

Total 2004 EIS Sorties:	1246.35
Total Baseline Sorties[1]:	3155
Total 2004 Below 3000 ft:	130.2
Total Baseline Below 3000 ft:	329.59
Total Proposed Below 3000 ft:	346

Notes:

[1] Naval Air Warfare Center Weapons Division Operational Requirements Document

[2] Emission Factors obtained from the following:

Aircraft	Document
AH-1	AESO Memorandum Report No. 9824 Revision B
UH-1	AESO Memorandum Report No. 9904 Revision A
CH-46	AESO Memorandum Report No. 9816 Revision F
F-35	F-35-FOUO - TIM Spreadsheet Model default.xls, CV Standard - Fly from 10 nm IP to initial
F-16	U.S. Air Force Air Conformity Applicability Model Version 4.5, Technical Documentation. Intermediate emission factor for F110-GE-129 engine.
C-130	AESO Memorandum Report No. 2000-10 Revision B, circle emission factor
AV-8	AESO Memorandum Report No. 9963 Revision C; Day attack.
F-14	AESO Memorandum Report No. 9945 Revision C, circle emission factor

[3] All F/A-18 operations provided in the Baseline Alternative would be zeroed out in the Proposed Action range flight operations

[4] For the Superior Valley Range , the number of F-35 operations in the Proposed Action alternative would be about 5% greater than the F/A-18 values provided in the Baseline Alternative for this range. This increase in operations is also applied to other aircraft and is somewhat in sync with values provided for range operations in the Superior Valley Range as provided in F-35C West Coast Home basing EIS (Table ES-5)

Total Range Flight Emission Summary

Table - HC
Baseline
Total Range Flight Emission Summary

Aircraft Type	Altitude	Hours in Flight	Emissions (TPY)					
			CO2	CO	NOX	HC	SO2	PM10
AH-1	0-3000	34.80498	47.58658	0.155926	0.08214	0.008353	0.005917	0.062127
	3000+	-	-	-	-	-	-	-
UH-1	0-3000	26.41305	0	0.062082	0.0575	0.003683	0.004082	0.042653
	3000+	-	-	-	-	-	-	-
CH-46	0-3000	57.73358	102.6792	0.638245	0.127303	0.110848	0.01299	0.057445
	3000+	-	-	-	-	-	-	-
F/A-18	0-3000	262.602	2748.123	2.126005	5.872653	0.383378	0.348525	5.541554
	3000+	-	-	-	-	-	-	-
F-16	0-3000	19.92161	0	0.176306	1.244503	0.018726	0.093532	0.008666
	3000+	-	-	-	-	-	-	-
C-130	0-3000	13.38129	96.36668	0.051855	0.269432	0.000599	0.01199	0.047356
	3000+	-	-	-	-	-	-	-
AV-8	0-3000	72.43627	488.9195	2.499414	0.921752	0.137629	0.062657	0.827947
	3000+	-	-	-	-	-	-	-
F-14	0-3000	10.79824	0	0.230296	0.174623	0.09478	0.010863	0.215631
	3000+	-	-	-	-	-	-	-
Total			3483.67	5.94	8.75	0.76	0.55	6.80

Table - HT
Proposed Condition
Total Range Flight Emission Summary

Aircraft Type	Altitude	Hours in Flight	Emissions (TPY)					
			CO2	CO	NOX	HC	SO2	PM10
AH-1	0-3000	43.32902	59.24096	0.194114	0.102256	0.010399	0.007366	0.077342
	3000+	-	-	-	-	-	-	-
UH-1	0-3000	33.01631	0	0.077602	0.071875	0.004604	0.005102	0.053316
	3000+	-	-	-	-	-	-	-
CH-46	0-3000	72.16697	128.349	0.797806	0.159128	0.138561	0.016238	0.071806
	3000+	-	-	-	-	-	-	-
F-35	0-3000	321.0229	3153.354	1.273395	6.979371	0.074848	0.388823	4.850565
	3000+	-	-	-	-	-	-	-
F-16	0-3000	21.42894	0	0.189646	1.338666	0.020143	0.100609	0.009322
	3000+	-	-	-	-	-	-	-
C-130	0-3000	16.2659	117.1405	0.063034	0.327514	0.000729	0.014574	0.057565
	3000+	-	-	-	-	-	-	-
AV-8	0-3000	89.3404	603.0164	3.08269	1.136857	0.169747	0.077279	1.021161
	3000+	-	-	-	-	-	-	-
F-14	0-3000	13.4978	0	0.28787	0.218279	0.118475	0.013579	0.269539
	3000+	-	-	-	-	-	-	-
Total			4061.10	5.97	10.33	0.54	0.62	6.41

Attachment 3
Ordnance and Explosive Detonation Emissions Analysis Support Data

Ordnance Emission Factors

Table - 1

Oradnance Emission Factors

	Source	Designation	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
Small Caliber ammo									
0.50 caliber	AP-42	DODIC A557	5.10E-03	1.10E-02	1.20E-03	3.10E-04	1.90E-04		1.30E-05
5.56 mm	AP-42	DODIC A059	8.70E-04	1.60E-03	8.50E-05	3.90E-05	2.80E-05		5.10E-06
7.62 mm (I)	AP-42	DODIC A111	9.50E-04	6.80E-04	4.40E-05	1.70E-05	1.50E-05	3.50E-07	2.60E-06
7.62 mm ball	AP-42	DODIC A143	1.20E-03	2.30E-03	9.70E-05	5.10E-05	3.80E-05		4.90E-06
7.62 mm ink	AP-42	DODIC A143	1.20E-03	2.30E-03	9.70E-05	5.10E-05	3.80E-05		4.90E-06
9 mm	AP-42	DODIC A363	2.00E-04	3.10E-04	1.50E-05	2.40E-05	2.00E-05	8.20E-08	6.80E-06
Large caliber									
20 mm (I)	29 Palms		2.00E-04	3.00E-04	4.00E-04	1.04E-05	6.01E-07		
25 mm (I)	AP-42	DODIC B129	4.40E-03	8.60E-04	2.00E-04	3.90E-03	2.50E-03		1.10E-05
27 mm	AP-42	DODIC B129	4.40E-03	8.60E-04	2.00E-04	3.90E-03	2.50E-03		1.10E-05
155 mm (I)	AP-42	DODIC D540	6.89E-01	1.94E+00	1.28E-01	5.58E-02	2.66E-02		3.25E-04
Artillery									
5-inch 54 (P)	SOCAL		1.50E-02	1.40E-02	3.60E-04	9.20E-04	7.60E-04		1.30E-06
Mortar									
81 mm (H)	AP-42	DODIC C256	1.40E+00	9.70E-02	1.60E-02	1.70E-01	9.30E-02		6.90E-04
120 mm (H)	AP-42	DODIC C788	5.20E+00	1.00E-01	3.30E-02	2.00E-01	7.90E-02		5.20E-04
Cluster bombs									
CBU-100	EPA 98		9.58E+01	4.35E-01	5.83E-03	6.72E+00	0.00E+00	9.88E-03	0.00E+00
CBU-103 (H)	EPA 98		7.84E+01	3.56E-01	4.77E-03	5.49E+00	0.00E+00	8.08E-03	0.00E+00
MK-20 (I)	EPA 98		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
General purpose bomb									
GBU-31 (F)	EPA 98		1.50E+01	2.10E-01	1.70E-01	6.50E+00	0.00E+00	1.40E-02	2.80E-02
GBU-31 (H)	EPA 98		4.32E+02	1.96E+00	2.63E-02	3.03E+01	0.00E+00	4.45E-02	0.00E+00
GBU-31 (I)	EPA 98		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
JDAM (F)	EPA 98		1.50E+01	2.10E-01	1.70E-01	6.50E+00	0.00E+00	1.40E-02	2.80E-02
JDAM (H)	EPA 98		1.86E+02	8.45E-01	1.13E-02	1.31E+01	0.00E+00	1.92E-02	0.00E+00
JDAM (I)	EPA 98		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
JDAM/GBU-32	EPA 98		9.17E+02	4.16E+00	5.58E-02	6.43E+01	0.00E+00	9.45E-02	0.00E+00
MK82	EPA 98		1.86E+02	8.45E-01	1.13E-02	1.31E+01	0.00E+00	1.92E-02	0.00E+00
MK-82 (H)	EPA 98		1.86E+02	8.45E-01	1.13E-02	1.31E+01	0.00E+00	1.92E-02	0.00E+00
MK-82(I)	EPA 98		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MK-83	EPA 98		4.32E+02	1.96E+00	2.63E-02	3.03E+01	0.00E+00	4.45E-02	0.00E+00
MK-83 (I)	EPA 98		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MK-84	EPA 98		9.17E+02	4.16E+00	5.58E-02	6.43E+01	0.00E+00	9.45E-02	0.00E+00
MK-84 (I)	EPA 98		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table - 1

Oradnance Emission Factors

	Source	Designation	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
Guided Bombs									
DMGB	EPA 98		1.86E+02	8.45E-01	1.13E-02	1.31E+01	0.00E+00	1.92E-02	0.00E+00
GBU-12	EPA 98		1.86E+02	8.45E-01	1.13E-02	1.31E+01	0.00E+00	1.92E-02	0.00E+00
GBU-12 (F)	EPA 98		1.50E+01	2.10E-01	1.70E-01	6.50E+00	0.00E+00	1.40E-02	2.80E-02
GBU-12 (H)	EPA 98		1.86E+02	8.45E-01	1.13E-02	1.31E+01	0.00E+00	1.92E-02	0.00E+00
GBU-12 (I)	EPA 98		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GBU-16	EPA 98		4.32E+02	1.96E+00	2.63E-02	3.03E+01	0.00E+00	4.45E-02	0.00E+00
GBU-24 (H)	EPA 98		9.17E+02	4.16E+00	5.58E-02	6.43E+01	0.00E+00	9.45E-02	0.00E+00
GBU-24 (I)	EPA 98		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GBU-38 (F)	EPA 98		1.50E+01	2.10E-01	1.70E-01	6.50E+00	0.00E+00	1.40E-02	2.80E-02
GBU-38 (H)	EPA 98		1.86E+02	8.45E-01	1.13E-02	1.31E+01	0.00E+00	1.92E-02	0.00E+00
GBU-38 (I)	EPA 98		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PGB (H)	EPA 98		1.86E+02	8.45E-01	1.13E-02	1.31E+01	0.00E+00	1.92E-02	0.00E+00
Practice bombs									
BDU-48/MK-106	EPA 98		1.94E+00	8.80E-03	1.18E-04	1.36E-01	0.00E+00	2.00E-04	0.00E+00
BDU-48	EPA 98		1.94E+00	8.80E-03	1.18E-04	1.36E-01	0.00E+00	2.00E-04	0.00E+00
BDU-45	EPA 98		1.94E+00	8.80E-03	1.18E-04	1.36E-01	0.00E+00	2.00E-04	0.00E+00
BDU-45 (I)	EPA 98		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BDU-50	EPA 98		1.94E+00	8.80E-03	1.18E-04	1.36E-01	0.00E+00	2.00E-04	0.00E+00
BDU-50 (I)	EPA 98		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LGTR	EPA 98		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LGTR (I)	EPA 98		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MK-76/BDU-33	EPA 98		1.94E+00	8.80E-03	1.18E-04	1.36E-01	0.00E+00	2.00E-04	0.00E+00
BDU-33	EPA 98		1.94E+00	8.80E-03	1.18E-04	1.36E-01	0.00E+00	2.00E-04	0.00E+00
MK-76	EPA 98		1.94E+00	8.80E-03	1.18E-04	1.36E-01	0.00E+00	2.00E-04	0.00E+00
MK-76 (I)	EPA 98		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MK-76 (FL)	EPA 98		2.25E+00	3.15E-02	2.55E-02	9.75E-01	0.00E+00	2.10E-03	4.20E-03
MK-76 (S)	EPA 98		1.94E+00	8.80E-03	1.18E-04	1.36E-01	0.00E+00	2.00E-04	0.00E+00
Small diameter bomb									
SDB (GBU-39)			3.69E+01	1.67E-01	2.24E-03	2.58E+00	0.00E+00	3.80E-03	0.00E+00
Rockets									
2.75"	AP-42	DODIC H459	2.40E+00	1.50E+00	2.60E-02	1.10E-01	1.00E-01		5.10E-02
2.75" (H)	AP-42	DODIC H163	3.10E+00	1.90E+00	3.16E-02	3.50E-01	2.20E-01		5.11E-02
2.75" (I)	AP-42	DODIC H459	2.40E+00	1.50E+00	2.60E-02	1.10E-01	1.00E-01		5.10E-02
Zuni (I)	EPA 98		2.31E+01	2.31E-01	5.50E-02	0.00E+00	0.00E+00	6.05E-02	0.00E+00

Table - 1

Oradnance Emission Factors

	Source	Designation	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
Missiles									
AGM-84 SLAM (I)	EPA 98		7.70E+01	6.60E-02	4.70E-02	1.20E-01	0.00E+00	1.20E-02	0.00E+00
AGM-88 HARM (F)	EPA 98		8.45E+01	1.71E-01	1.32E-01	3.37E+00	0.00E+00	1.90E-02	1.40E-02
AGM-114/Hellfire (H)	EPA 98		5.60E+01	1.12E-01	2.46E-02	1.28E+00	0.00E+00	7.80E-03	0.00E+00
AGM-154 (I)	EPA 98		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
AGM-154C (H)	EPA 98		4.85E+02	2.20E+00	2.95E-02	3.40E+01	0.00E+00	5.00E-02	0.00E+00
AIM-9 Sidewinder (I)	EPA 98		5.78E+01	4.95E-02	3.53E-02	9.00E-02	0.00E+00	9.00E-03	0.00E+00
AIM-120 (I)	EPA 98		9.63E+01	8.25E-02	5.88E-02	1.50E-01	0.00E+00	1.50E-02	0.00E+00
EP II (H)	EPA 98		4.85E+02	2.20E+00	2.95E-02	3.40E+01	0.00E+00	5.00E-02	0.00E+00
EP II (I)	EPA 98		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RAM (I)	EPA 98		7.70E+01	6.60E-02	4.70E-02	1.20E-01	0.00E+00	1.20E-02	0.00E+00
SRAW (H)	EPA 98		8.70E+00	2.53E-02	2.65E-03	3.46E-01	0.00E+00	1.10E-03	0.00E+00
TOW (H)	EPA 98		1.74E+01	5.06E-02	5.29E-03	6.92E-01	0.00E+00	2.20E-03	0.00E+00
Tomahawk (I)	EPA 98		2.31E+02	1.98E-01	1.41E-01	3.60E-01	0.00E+00	3.60E-02	0.00E+00
UK Brimstone	EPA 98		2.51E+01	5.72E-02	9.99E-03	7.04E-01	0.00E+00	3.40E-03	0.00E+00
Flares									
IR Countermeasure	AP-42	DODIC L410	1.10E-02	1.30E-03	1.30E-04	6.20E-03	6.20E-03	7.90E-06	
Illumination flare	AP-42	DODIC D505	1.80E+00	2.60E-02	5.90E-02	3.00E+00		2.70E-03	5.80E-05

Table - 2

EPA 1998 Emission Factors

	Item	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
Propellant	M-43 (Navy)	7.70E-01	6.60E-04	4.70E-04	1.20E-03		1.20E-04	
Explosive	HBX surr.	9.70E-01	4.40E-03	5.90E-05	6.80E-02		1.00E-04	0.00E+00
Fuse	FMU-139	1.50E+00	2.10E-02	1.70E-02	6.50E-01		1.40E-03	2.80E-03
Prop. (Zuni)	M-6	4.20E-01	4.20E-03	1.00E-03			1.10E-03	

EPA 98 = Emission Factors for the Disposal of Energetic Materials by OB/OD
29 Palms = 29 Palms LAS EIS (2009)
SOCAL = SOCAL Range EIS (2010)

Ordnance Emissions – Baseline

Table - 3

Eastern Kern County APCD - Baseline

Range	Item	#/yr	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
Charlie	20 mm (I)	1,633	3.27E-01	4.90E-01	6.53E-01	1.70E-02	9.81E-04	0.00E+00	0.00E+00
	GBU-12	1	1.86E+02	8.45E-01	1.13E-02	1.31E+01	0.00E+00	1.92E-02	0.00E+00
	GBU-31	1	4.32E+02	1.96E+00	2.63E-02	3.03E+01	0.00E+00	4.45E-02	0.00E+00
	JDAM/GBU-32	6	5.50E+03	2.49E+01	3.35E-01	3.86E+02	0.00E+00	5.67E-01	0.00E+00
	MK-83	1	4.32E+02	1.96E+00	2.63E-02	3.03E+01	0.00E+00	4.45E-02	0.00E+00
	MK-84	3	2.75E+03	1.25E+01	1.67E-01	1.93E+02	0.00E+00	2.84E-01	0.00E+00
	BDU-48/MK-106	52	1.01E+02	4.58E-01	6.14E-03	7.07E+00	0.00E+00	1.04E-02	0.00E+00
	BDU-45 (I)	12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	LGTR	144	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-76/BDU-33	104	2.02E+02	9.15E-01	1.23E-02	1.41E+01	0.00E+00	2.08E-02	0.00E+00
Baker	20 mm (I)	3,136	6.27E-01	9.41E-01	1.25E+00	3.26E-02	1.88E-03	0.00E+00	0.00E+00
	25 mm (I)	300	1.32E+00	2.58E-01	6.00E-02	1.17E+00	7.50E-01	0.00E+00	3.30E-03
	7.62 mm (I)	3,205	3.04E+00	2.18E+00	1.41E-01	5.45E-02	4.81E-02	1.12E-03	8.33E-03
	CBU-100	24	2.30E+03	1.04E+01	1.40E-01	1.61E+02	0.00E+00	2.37E-01	0.00E+00
	JDAM (I)	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-82 (I)	50	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-84 (I)	8	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	GBU-12 (I)	4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	BDU-45 (I)	4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	LGTR (I)	2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-76 (I)	7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-76 (FL)	3	6.75E+00	9.45E-02	7.65E-02	2.93E+00	0.00E+00	6.30E-03	1.26E-02
	MK-76 (S)	52	1.01E+02	4.58E-01	6.14E-03	7.07E+00	0.00E+00	1.04E-02	0.00E+00
	2.75" Rocket (I)	338	8.11E+02	5.07E+02	8.79E+00	3.72E+01	3.38E+01	0.00E+00	1.72E+01
	Zuni (I)	7	1.62E+02	1.62E+00	3.85E-01	0.00E+00	0.00E+00	4.24E-01	0.00E+00
	AGM-114/Hellfire (H)	2	1.12E+02	2.24E-01	4.91E-02	2.57E+00	0.00E+00	1.56E-02	0.00E+00
	Tomahawk (I)	1	2.31E+02	1.98E-01	1.41E-01	3.60E-01	0.00E+00	3.60E-02	0.00E+00
	CM Flares	220	2.42E+00	2.86E-01	2.86E-02	1.36E+00	1.36E+00	1.74E-03	0.00E+00
	ILL. Flare	2	3.60E+00	5.20E-02	1.18E-01	6.00E+00	0.00E+00	5.40E-03	1.16E-04
		Total (lb/yr) =	1.33E+04	5.68E+02	1.24E+01	8.93E+02	3.60E+01	1.73E+00	1.73E+01
		Total (tpy) =	6.67E+00	2.84E-01	6.21E-03	4.47E-01	1.80E-02	8.64E-04	8.63E-03

Table - 4

Mojave Desert AQMD - Baseline

Range	Item	#/yr	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
Wingate	20 mm (I)	2,438	4.88E-01	7.31E-01	9.75E-01	2.54E-02	1.47E-03	0.00E+00	0.00E+00
	0.50 Caliber	150	7.65E-01	1.65E+00	1.80E-01	4.65E-02	2.85E-02	0.00E+00	1.95E-03
	7.62 mm (I)	3	2.85E-03	2.04E-03	1.32E-04	5.10E-05	4.50E-05	1.05E-06	7.80E-06
	MK-82	6	1.12E+03	5.07E+00	6.80E-02	7.83E+01	0.00E+00	1.15E-01	0.00E+00
	MK-83	1	4.32E+02	1.96E+00	2.63E-02	3.03E+01	0.00E+00	4.45E-02	0.00E+00
	BDU-48/MK-106	150	2.91E+02	1.32E+00	1.77E-02	2.04E+01	0.00E+00	3.00E-02	0.00E+00
	BDU-45 (I)	3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	BDU-50 (I)	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	LGTR	3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-76/BDU-33	199	3.86E+02	1.75E+00	2.35E-02	2.71E+01	0.00E+00	3.98E-02	0.00E+00
	SDB	2	7.37E+01	3.34E-01	4.48E-03	5.17E+00	0.00E+00	7.60E-03	0.00E+00
Superior Valley	20 mm (I)	48,860	9.77E+00	1.47E+01	1.95E+01	5.08E-01	2.94E-02	0.00E+00	0.00E+00
	27 mm	330	1.45E+00	2.84E-01	6.60E-02	1.29E+00	8.25E-01	0.00E+00	3.63E-03
	0.50 Caliber	8,776	4.48E+01	9.65E+01	1.05E+01	2.72E+00	1.67E+00	0.00E+00	1.14E-01
	7.62 mm (I)	17,050	1.62E+01	1.16E+01	7.50E-01	2.90E-01	2.56E-01	5.97E-03	4.43E-02
	MK-82	16	2.98E+03	1.35E+01	1.81E-01	2.09E+02	0.00E+00	3.07E-01	0.00E+00
	MK-83	7	3.02E+03	1.37E+01	1.84E-01	2.12E+02	0.00E+00	3.12E-01	0.00E+00
	GBU-12	17	3.17E+03	1.44E+01	1.93E-01	2.22E+02	0.00E+00	3.26E-01	0.00E+00
	GBU-16	3	1.29E+03	5.87E+00	7.88E-02	9.08E+01	0.00E+00	1.34E-01	0.00E+00
	BDU-48	1,062	2.06E+03	9.35E+00	1.25E-01	1.44E+02	0.00E+00	2.12E-01	0.00E+00
	BDU-45	88	1.71E+02	7.74E-01	1.04E-02	1.20E+01	0.00E+00	1.76E-02	0.00E+00
	BDU-50	6	1.16E+01	5.28E-02	7.08E-04	8.16E-01	0.00E+00	1.20E-03	0.00E+00
	LGTR	615	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	BDU-33	50	9.70E+01	4.40E-01	5.90E-03	6.80E+00	0.00E+00	1.00E-02	0.00E+00
	MK-76	8,598	1.67E+04	7.57E+01	1.01E+00	1.17E+03	0.00E+00	1.72E+00	0.00E+00
	2.75" Rocket	342	8.21E+02	5.13E+02	8.89E+00	3.76E+01	3.42E+01	0.00E+00	1.74E+01
	CM flares	120	1.32E+00	1.56E-01	1.56E-02	7.44E-01	7.44E-01	9.48E-04	0.00E+00
	ILL flares	123	2.21E+02	3.20E+00	7.26E+00	3.69E+02	0.00E+00	3.32E-01	7.13E-03
		Total (lb/yr) =	3.29E+04	7.86E+02	5.01E+01	2.64E+03	3.78E+01	3.62E+00	1.76E+01
		Total (tpy) =	1.64E+01	3.93E-01	2.51E-02	1.32E+00	1.89E-02	1.81E-03	8.81E-03

Table - 5

Great Basin AQMD - Baseline

Range	Item	#/yr	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
APL	20 mm (I)	150	3.00E-02	4.50E-02	6.00E-02	1.56E-03	9.02E-05	0.00E+00	0.00E+00
	CBU-103 (H)	2	1.57E+02	7.11E-01	9.53E-03	1.10E+01	0.00E+00	1.62E-02	0.00E+00
	MK-20 (I)	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	GBU-31 (H)	2	8.63E+02	3.92E+00	5.25E-02	6.05E+01	0.00E+00	8.90E-02	0.00E+00
	GBU-31 (I)	16	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	JDAM (F)	2	3.00E+01	4.20E-01	3.40E-01	1.30E+01	0.00E+00	2.80E-02	5.60E-02
	JDAM (H)	9	1.68E+03	7.60E+00	1.02E-01	1.18E+02	0.00E+00	1.73E-01	0.00E+00
	JDAM (I)	22	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-82 (I)	4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-83 (I)	4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	GBU-12 (F)	1	1.50E+01	2.10E-01	1.70E-01	6.50E+00	0.00E+00	1.40E-02	2.80E-02
	GBU-12 (H)	4	7.45E+02	3.38E+00	4.53E-02	5.22E+01	0.00E+00	7.68E-02	0.00E+00
	GBU-12 (I)	4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	PGB (H)	3	5.59E+02	2.53E+00	3.40E-02	3.92E+01	0.00E+00	5.76E-02	0.00E+00
	BDU-50 (I)	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	LGTR (I)	2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-76 (I)	10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-76 (S)	30	5.82E+01	2.64E-01	3.54E-03	4.08E+00	0.00E+00	6.00E-03	0.00E+00
	AGM-114/Hellfire (H)	12	6.72E+02	1.35E+00	2.95E-01	1.54E+01	0.00E+00	9.36E-02	0.00E+00
	AGM-154 (I)	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	AGM-154C (H)	1	4.85E+02	2.20E+00	2.95E-02	3.40E+01	0.00E+00	5.00E-02	0.00E+00
	AIM-120 (I)	1	9.63E+01	8.25E-02	5.88E-02	1.50E-01	0.00E+00	1.50E-02	0.00E+00
	EP II (H)	2	9.70E+02	4.40E+00	5.90E-02	6.80E+01	0.00E+00	1.00E-01	0.00E+00
	EP II (I)	5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	TOW (H)	2	3.48E+01	1.01E-01	1.06E-02	1.38E+00	0.00E+00	4.40E-03	0.00E+00
Coso	0.50 Caliber	500	2.55E+00	5.50E+00	6.00E-01	1.55E-01	9.50E-02	0.00E+00	6.50E-03
	MK-76 (I)	6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	AIM-120 (I)	1	9.63E+01	8.25E-02	5.88E-02	1.50E-01	0.00E+00	1.50E-02	0.00E+00
Darwin Wash	0.50 Caliber	154,896	7.90E+02	1.70E+03	1.86E+02	4.80E+01	2.94E+01	0.00E+00	2.01E+00
	5.56 mm	499,271	4.34E+02	7.99E+02	4.24E+01	1.95E+01	1.40E+01	0.00E+00	2.55E+00
	7.62 mm ball	1,680	2.02E+00	3.86E+00	1.63E-01	8.57E-02	6.38E-02	0.00E+00	8.23E-03
	7.62 mm ink	92,736	1.11E+02	2.13E+02	9.00E+00	4.73E+00	3.52E+00	0.00E+00	4.54E-01
	9 mm	568,512	1.14E+02	1.76E+02	8.53E+00	1.36E+01	1.14E+01	4.66E-02	3.87E+00

The tables below provide ordnance emissions for the George Range as represented in Appendix G of the LEIS. The deletions and modifications (changes tracked) provide updates needed to meet the newly identified mission requirements for the Aircraft Survivability Laboratory (AKA – Weapons Survivability Laboratory or WSL). The first table is for the Baseline Alternative; the second for the Proposed Action.

Table 6. Baseline Alternative George Range Emissions from Table 3 – GBAQMD)

Item #/y	r	CO_2 CO		NO_X PM	$_{10}$ PM	$_{2.5}$ SO	$_2$ Pb	
JDAM (I)	10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MK-82 (H)	1	1.86E+02	8.45E-01	1.13E-02	1.31E+01	0.00E+00	1.92E-02	0.00E+00
DMGB 31	16	2.89E+03	1.31E+01	1.76E-01	2.02E+02	0.00E+00	2.98E-01	0.00E+00
GBU-38 (I)	2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PGB (H)	1	1.86E+02	8.45E-01	1.13E-02	1.31E+01	0.00E+00	1.92E-02	0.00E+00
BDU-45 (I)	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BDU-50 (I)	4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LGTR (I)	7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.75”Rocket (H)	10	3.10E+01	1.90E+01	3.16E-01	3.50E+00	2.20E+00	0.00E+00	5.11E-01
AGM-84H – SLAM (I)	1	3.85E+01	3.30E-02	2.35E-02	6.00E-02	0.00E+00	6.00E-03	0.00E+00
AGM-8 HARM (F)	3	2.11E+02	4.28E-01	3.30E-02	8.43E+00	0.00E+00	4.75E-02	3.50E-02
AGM-114/Hellfire (H)	5	2.80E+02	5.61E-01	1.23E-01	6.42E+00	0.00E+00	3.90E-02	0.00E+00
AGM-154 (I)	2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
AGM-154C (H)	2	7.28E+02	3.30E+00	4.43E-02	5.10E+01	0.00E+00	7.50E-02	0.00E+00
AIM-9 Sidewinder (I)	4	2.02E+02	1.73E-01	1.23E-01	3.15E-01	0.00E+00	2.50E-02	0.00E+00
EP II (H)	1	2.43E+02	1.10E+00	1.48E-02	1.70+01	0.00E+00	0.00E+00	0.00E+00
EP II (I)	9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RAM (I)	1	3.85E+01	3.30E-02	2.35E-02	6.00E-02	0.00E+00	6.00E-03	0.00E+00
SRAW (H)	8	6.53E+01	1.90E-01	1.98E-02	2.60E+00	0.00E+00	8.25E-03	0.00E+00
Tomahawk (I)	4	8.09E+02	6.93E-01	4.94E-01	1.26E+00	0.00E+00	1.26E-01	0.00E+00
UK Brimstone	1	2.51E+01	5.72E-02	9.99E-03	7.04E-01	0.00E+00	3.40E-03	0.00E+00
CM Flares	1,850	2.04E+01	2.40E+00	2.40E-01	1.15E+01	1.15E+01	1.46E-02	0.00E+00
5.56mm X 45mm Ball	1,700	1.48E+00	2.72E+00	1.45E-01	6.63E-02	4.76E-02	0.00E+00	8.67E-03
5.56mm X 45mm Tracer	775	6.74E-01	1.24E+00	6.59E-02	3.02E-02	2.17E-02	0.00E+00	3.95E-03
7.62mm X 51mm Ball	11,500	1.38E+01	2.65E+01	1.12E+00	5.87E-01	4.37E-01	0.00E+00	5.64E-02
7.62mm X 51mm Tracer	2,700	3.24E+00	6.21E+00	2.62E-01	1.38E-01	1.03E-01	0.00E+00	1.32E-02
0.50 cal X 99mm Ball	5,500	2.81E+02	6.05E+01	2.96E+01	1.40E+03	6.60E+02	0.00E+00	0.00E+00
0.50 cal X 99mm Tracer	1,550	7.91E+01	1.71E+01	8.35E+00	3.95E+02	1.86E+02	0.00E+00	0.00E+00
5.45mm X 39mm Ball	3,900	7.80E-01	1.17E+00	1.56E+00	4.06E-02	2.34E-03	0.00E+00	0.00E+00
5.45mm X 39mm Tracer	1,150	2.30E-01	3.45E-01	4.60E-01	1.20E-02	6.91E-04	0.00E+00	0.00E+00
7.62mm X 39mm Ball	5,700	6.84E+00	1.31E+01	5.53E-01	2.91E-01	2.17E-01	0.00E+00	2.79E-02
7.62mm X 39mm Tracer	2,200	2.64E+00	5.06E+00	2.13E-01	1.12E-01	8.36E-02	0.00E+00	1.08E-02
7.62mm x 54Rmm Ball	11,500	1.38E+01	2.65E+01	1.12E+00	5.87E-01	4.37E-01	0.00E+00	5.64E-02
7.62mm x 54Rmm Tracer	4,600	5.52E+00	1.06E+01	4.46E-01	2.35E-01	1.75E-01	0.00E+00	2.25E-02
12.7mm X 108mm API	8,900	1.78E+00	2.76E+00	1.34E-01	2.14E-01	1.78E-01	7.30E-04	6.05E-02
12.7mm X 108mm API-T	3,500	7.00E-01	1.09E+00	5.25E-02	8.40E-02	7.00E-02	2.87E-04	2.38E-02
14.5mm X 114mm API	2,900	5.80E-01	8.99E-01	4.35E-02	6.96E-02	5.80E-02	2.38E-04	1.97E-02
14.5mm X 115mm API-T	1,250	2.50E-01	3.88E-01	1.88E-02	3.00E-02	2.50E-02	1.03E-04	8.50E-03
23mm X 152mm API-T	2,315	7.64E+00	1.99E+00	4.63E-01	9.03E+0 0	5.79E+00	0.00E+00	2.55E-02
30mm X 165mm AP-T	2,050	1.06E+01	2.77E+00	6.44E-01	1.26E+0 1	8.05E+00	0.00E+00	3.54E-02
40mm X 365mm tP-T	580	1.00E+03	6.26E+02	1.09E+01	4.59E+01	4.18E+01	0.00E+00	2.13E+01
RPG-7 135		5.62E+02	3.38E+02	3.24E+00	1.32E+02	8.91E+01	1.54E+01	0.00E+00
RPG-22 139		5.78E+02	3.48E+02	3.34E+00	1.36E+02	9.17E+01	1.58E+01	0.00E+00
S-5 Rocket	85	2.04E+02	1.28E+02	2.21E+00	9.35E+00	8.50E+00	0.00E+00	4.34E+00
#/y	r	**1.62E+04**	**4.54E+03**	**3.12E+02**	**2.95E+03**	**1.16E+03**	**3.27E+01**	**3.47E+01**
tp	y	**8.09E+00**	**2.27E+00**	**1.56E-01**	**1.47E+00**	**5.79E-01**	**1.64E-02**	**1.74E-02**

Table 7. Summary of Baseline Impacts

Air District	CO_2	CO		NO_X	PM	$_{10}$ PM	$_{2.5}$ SO	$_2$ Pb	
Eastern Kern APCD	6.67E+00	2.84E-01		6.21E-03	4.47E-01	1.80E-02	8.64E-04	8.63E-03	
Mojave Desert AQMD	1.64E+01	3.93E-01		2.51E-02	1.32E+00	1.89E-02	1.81E-03	8.81E-03	
Great Basin AQMD	8.09E+00	2.27E+00		1.56E-01	1.47E+00	5.79E-01	1.64E-02	1.74E-02	
Total (tpy)	3.12E+01	2.95E+00		1.87E-01	3.24E+00	6.16E-01	1.91E-02		

Ordnance Emissions – Proposed Alternative

Table - 8

Eastern Kern County APCD - Preferred

Range	Item	#/yr	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
Charlie	20 mm (I)	2,041	4.08E-01	6.12E-01	8.17E-01	2.12E-02	1.23E-03	0.00E+00	0.00E+00
	GBU-12	1	2.33E+02	1.06E+00	1.42E-02	1.63E+01	0.00E+00	2.40E-02	0.00E+00
	GBU-31	1	5.40E+02	2.45E+00	3.28E-02	3.78E+01	0.00E+00	5.56E-02	0.00E+00
	JDAM/GBU-32	8	6.87E+03	3.12E+01	4.18E-01	4.82E+02	0.00E+00	7.09E-01	0.00E+00
	MK-83	1	5.40E+02	2.45E+00	3.28E-02	3.78E+01	0.00E+00	5.56E-02	0.00E+00
	MK-84	4	3.44E+03	1.56E+01	2.09E-01	2.41E+02	0.00E+00	3.54E-01	0.00E+00
	BDU-48/MK-106	65	1.26E+02	5.72E-01	7.67E-03	8.84E+00	0.00E+00	1.30E-02	0.00E+00
	BDU-45 (I)	15	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	LGTR	180	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-76/BDU-33	130	2.52E+02	1.14E+00	1.53E-02	1.77E+01	0.00E+00	2.60E-02	0.00E+00
Baker	20 mm (I)	3,920	7.84E-01	1.18E+00	1.57E+00	4.08E-02	2.36E-03	0.00E+00	0.00E+00
	25 mm (I)	375	1.65E+00	3.23E-01	7.50E-02	1.46E+00	9.38E-01	0.00E+00	4.13E-03
	7.62 mm (I)	4,006	3.81E+00	2.72E+00	1.76E-01	6.81E-02	6.01E-02	1.40E-03	1.04E-02
	CBU-100	30	2.88E+03	1.30E+01	1.75E-01	2.02E+02	0.00E+00	2.96E-01	0.00E+00
	JDAM (I)	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-82 (I)	63	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-84 (I)	10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	GBU-12 (I)	5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	BDU-45 (I)	5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	LGTR (I)	3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-76 (I)	9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-76 (FL)	4	8.44E+00	1.18E-01	9.56E-02	3.66E+00	0.00E+00	7.88E-03	1.58E-02
	MK-76 (S)	65	1.26E+02	5.72E-01	7.67E-03	8.84E+00	0.00E+00	1.30E-02	0.00E+00
	2.75" Rocket (I)	423	1.01E+03	6.34E+02	1.10E+01	4.65E+01	4.23E+01	0.00E+00	2.15E+01
	Zuni (I)	9	2.02E+02	2.02E+00	4.81E-01	0.00E+00	0.00E+00	5.29E-01	0.00E+00
	AGM-114/Hellfire (H)	3	1.40E+02	2.81E-01	6.14E-02	3.21E+00	0.00E+00	1.95E-02	0.00E+00
	Tomahawk (I)	1	2.89E+02	2.48E-01	1.76E-01	4.50E-01	0.00E+00	4.50E-02	0.00E+00
CM flares		275	3.03E+00	3.58E-01	3.58E-02	1.71E+00	1.71E+00	2.17E-03	0.00E+00
ILL. Flares		3	4.50E+00	6.50E-02	1.48E-01	7.50E+00	0.00E+00	6.75E-03	1.45E-04
	Total (lb/yr) =		1.67E+04	7.09E+02	1.53E+01	1.11E+03	4.33E+01	2.15E+00	2.16E+01
	Total (tpy) =		8.33E+00	3.55E-01	7.67E-03	5.54E-01	2.16E-02	1.07E-03	1.08E-02

Table - 9

Mojave Desert AQMD - Preferred

Range	Item	#/yr	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
Wingate	20 mm (I)	3,048	6.10E-01	9.14E-01	1.22E+00	3.17E-02	1.83E-03	0.00E+00	0.00E+00
	0.50 Caliber	188	9.56E-01	2.06E+00	2.25E-01	5.81E-02	3.56E-02	0.00E+00	2.44E-03
	7.62 mm (I)	4	3.56E-03	2.55E-03	1.65E-04	6.38E-05	5.63E-05	1.31E-06	9.75E-06
	MK-82	8	1.40E+03	6.34E+00	8.50E-02	9.79E+01	0.00E+00	1.44E-01	0.00E+00
	MK-83	1	5.40E+02	2.45E+00	3.28E-02	3.78E+01	0.00E+00	5.56E-02	0.00E+00
	BDU-48/MK-106	188	3.64E+02	1.65E+00	2.21E-02	2.55E+01	0.00E+00	3.75E-02	0.00E+00
	BDU-45 (I)	4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	BDU-50 (I)	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	LGTR	4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-76/BDU-33	249	4.83E+02	2.19E+00	2.94E-02	3.38E+01	0.00E+00	4.98E-02	0.00E+00
	SDB	3	9.22E+01	4.18E-01	5.61E-03	6.46E+00	0.00E+00	9.50E-03	0.00E+00
Superior Valley	20 mm (I)	61,075	1.22E+01	1.83E+01	2.44E+01	6.35E-01	3.67E-02	0.00E+00	0.00E+00
	27 mm	413	1.82E+00	3.55E-01	8.25E-02	1.61E+00	1.03E+00	0.00E+00	4.54E-03
	0.50 Caliber	10,970	5.59E+01	1.21E+02	1.32E+01	3.40E+00	2.08E+00	0.00E+00	1.43E-01
	7.62 mm (I)	21,313	2.02E+01	1.45E+01	9.38E-01	3.62E-01	3.20E-01	7.46E-03	5.54E-02
	MK-82	20	3.72E+03	1.69E+01	2.27E-01	2.61E+02	0.00E+00	3.84E-01	0.00E+00
	MK-83	9	3.78E+03	1.71E+01	2.30E-01	2.65E+02	0.00E+00	3.89E-01	0.00E+00
	GBU-12	21	3.96E+03	1.80E+01	2.41E-01	2.77E+02	0.00E+00	4.08E-01	0.00E+00
	GBU-16	4	1.62E+03	7.34E+00	9.85E-02	1.13E+02	0.00E+00	1.67E-01	0.00E+00
	BDU-48	1,328	2.58E+03	1.17E+01	1.57E-01	1.81E+02	0.00E+00	2.66E-01	0.00E+00
	BDU-45	110	2.13E+02	9.68E-01	1.30E-02	1.50E+01	0.00E+00	2.20E-02	0.00E+00
	BDU-50	8	1.46E+01	6.60E-02	8.85E-04	1.02E+00	0.00E+00	1.50E-03	0.00E+00
	LGTR	769	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	BDU-33	63	1.21E+02	5.50E-01	7.38E-03	8.50E+00	0.00E+00	1.25E-02	0.00E+00
	MK-76	10,748	2.09E+04	9.46E+01	1.27E+00	1.46E+03	0.00E+00	2.15E+00	0.00E+00
	2.75" Rocket	428	1.03E+03	6.41E+02	1.11E+01	4.70E+01	4.28E+01	0.00E+00	2.18E+01
	CM flares	150	1.65E+00	1.95E-01	1.95E-02	9.30E-01	9.30E-01	1.19E-03	0.00E+00
	ILL flares	154	2.77E+02	4.00E+00	9.07E+00	4.61E+02	0.00E+00	4.15E-01	8.92E-03
		Total (lb/yr) =	4.11E+04	9.82E+02	6.27E+01	3.30E+03	4.72E+01	4.52E+00	2.20E+01
		Total (tpy) =	2.06E+01	4.91E-01	3.13E-02	1.65E+00	2.36E-02	2.26E-03	1.10E-02

Table - 10

Great Basin AQMD - Preferred

Range	Item	#/yr	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
APL	20 mm (I)	188	3.75E-02	5.63E-02	7.50E-02	1.95E-03	1.13E-04	0.00E+00	0.00E+00
	CBU-103 (H)	3	1.96E+02	8.89E-01	1.19E-02	1.37E+01	0.00E+00	2.02E-02	0.00E+00
	MK-20 (I)	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	GBU-31 (H)	3	1.08E+03	4.90E+00	6.56E-02	7.57E+01	0.00E+00	1.11E-01	0.00E+00
	GBU-31 (I)	20	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	JDAM (F)	3	3.75E+01	5.25E-01	4.25E-01	1.63E+01	0.00E+00	3.50E-02	7.00E-02
	JDAM (H)	11	2.10E+03	9.50E+00	1.27E-01	1.47E+02	0.00E+00	2.16E-01	0.00E+00
	JDAM (I)	28	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-82 (I)	5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-83 (I)	5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	GBU-12 (F)	1	1.88E+01	2.63E-01	2.13E-01	8.13E+00	0.00E+00	1.75E-02	3.50E-02
	GBU-12 (H)	5	9.31E+02	4.22E+00	5.66E-02	6.53E+01	0.00E+00	9.60E-02	0.00E+00
	GBU-12 (I)	5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	PGB (H)	4	6.98E+02	3.17E+00	4.25E-02	4.90E+01	0.00E+00	7.20E-02	0.00E+00
	BDU-50 (I)	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	LGTR (I)	3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-76 (I)	13	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	MK-76 (S)	38	7.28E+01	3.30E-01	4.43E-03	5.10E+00	0.00E+00	7.50E-03	0.00E+00
	AGM-114/Hellfire (H)	15	8.39E+02	1.68E+00	3.68E-01	1.93E+01	0.00E+00	1.17E-01	0.00E+00
	AGM-154 (I)	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	AGM-154C (H)	1	6.06E+02	2.75E+00	3.69E-02	4.25E+01	0.00E+00	6.25E-02	0.00E+00
	AIM-120 (I)	1	1.20E+02	1.03E-01	7.34E-02	1.88E-01	0.00E+00	1.88E-02	0.00E+00
	EP II (H)	3	1.21E+03	5.50E+00	7.38E-02	8.50E+01	0.00E+00	1.25E-01	0.00E+00
	EP II (I)	6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	TOW (H)	3	4.35E+01	1.27E-01	1.32E-02	1.73E+00	0.00E+00	5.50E-03	0.00E+00
Coso	0.50 Caliber	625	3.19E+00	6.88E+00	7.50E-01	1.94E-01	1.19E-01	0.00E+00	8.13E-03
	MK-76 (I)	8	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	AIM-120 (I)	1	1.20E+02	1.03E-01	7.34E-02	1.88E-01	0.00E+00	1.88E-02	0.00E+00
Darwin Wash	0.50 Caliber	193,620	9.87E+02	2.13E+03	2.32E+02	6.00E+01	3.68E+01	0.00E+00	2.52E+00
	5.56 mm	624,089	5.43E+02	9.99E+02	5.30E+01	2.43E+01	1.75E+01	0.00E+00	3.18E+00
	7.62 mm ball	2,100	2.52E+00	4.83E+00	2.04E-01	1.07E-01	7.98E-02	0.00E+00	1.03E-02
	7.62 mm ink	115,920	1.39E+02	2.67E+02	1.12E+01	5.91E+00	4.40E+00	0.00E+00	5.68E-01
	9 mm	710,640	1.42E+02	2.20E+02	1.07E+01	1.71E+01	1.42E+01	5.83E-02	4.83E+00

Table 11. Proposed Action George Range Emissions from Table 3 – GBAQMD)

Item #/y	r	CO_2 CO		NO_X PM	$_{10}$ PM	$_{2.5}$ SO	$_2$ Pb	
JDAM (I)	12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MK-82 (H)	1	2.33E+02	1.06	0.0142	16.3	0	0.024	0
DMGB 31	19	3,610	16.4	0.219	253	0	0.372	0
GBU-38 (I)	2 0		0	0 0		0	0	0
PGB (H)	1	233	1.06	0.0142	16.3	0	0.024	0
BDU-45 (I)	1 0		0	0 0		0	0	0
BDU-50 (I)	4 0		0	0 0		0	0	0
LGTR (I)	8	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.75”Rocket (H)	13	3.98E+01	2.44E+01	4.06E-01	4.49E+00	2.83E+00	0.00E+00	6.55E-01
AGM-84H – SLAM (I)	1	48.1	0.0413	0.0294	0.0750	0	0.00750	0
AGM-8 HARM (F)	3	264	0.534	0.413	10.5	0	0.0594	0.0438
AGM-114/Hellfire (H)	6	350	0.701	0.154	8.03	0	0.0488	0
AGM-154 (I)	3 0		0	0 0		0	0	0
AGM-154C (H)	2	909	4.13	0.0553	63.8	0	0.0938	0
AIM-9 Sidewinder (I)	4	253	0.217	0.154	0.394	0	0.0394	0
EP II (H)	1	303	1.38	0.o0184	21.3	0	0.0313	0
EP II (I)	11	0	0	0	0	0	0	0
RAM (I)	1	48.1	0.0413	0.0294	0.0750	0	0.00750	0
SRAW (H)	9 81.6		0.237	0.0248	3.24 0		0.0103	0
Tomahawk (I)	4	1,010	0.866	0.617	1.58	0	0.158	0
UK Brimstone	1	31.4	0.0715	0.0125	0.880	0	0.00425	0
CM Flares	2,313	2.55E+01	3.00E+00	3.00E-01	1.43E+01	1.43E+01	1.82E-02	0.00E+00
5.56mm X 45mm Ball	2,125	1.48E+00	2.72E+00	1.45E-01	6.63E-02	4.76E-02	0.00E+00	8.67E-03
5.56mm X 45mm Tracer	969	6.74E-01	1.24E+00	6.59E-02	3.02E-02	2.17E-02	0.00E+00	3.95E-03
7.62mm X 51mm Ball	14,375	1.38E+01	2.65E+01	1.12E+00	5.87E-01	4.37E-01	0.00E+00	5.64E-02
7.62mm X 51mm Tracer	3,375	3.24E+00	6.21E+00	2.62E-01	1.38E-01	1.03E-01	0.00E+00	1.32E-02
0.50 cal X 99mm Ball	6,875	2.81E+02	6.05E+01	2.96E+01	1.40E+03	6.60E+02	0.00E+00	0.00E+00
0.50 cal X 99mm Tracer	1,938	7.91E+01	1.71E+01	8.35E+00	3.95E+02	1.86E+02	0.00E+00	0.00E+00
5.45mm X 39mm Ball	4,875	7.80E-01	1.17E+00	1.56E+00	4.06E-02	2.34E-03	0.00E+00	0.00E+00
5.45mm X 39mm Tracer	1,438	2.30E-01	3.45E-01	4.60E-01	1.20E-02	6.91E-04	0.00E+00	0.00E+00
7.62mm X 39mm Ball	7,125	6.84E+00	1.31E+01	5.53E-01	2.91E-01	2.17E-01	0.00E+00	2.79E-02
7.62mm X 39mm Tracer	2,750	2.64E+00	5.06E+00	2.13E-01	1.12E-01	8.36E-02	0.00E+00	1.08E-02
7.62mm x 54Rmm Ball	14,375	1.38E+01	2.65E+01	1.12E+00	5.87E-01	4.37E-01	0.00E+00	5.64E-02
7.62mm x 54Rmm Tracer	5,750	5.52E+00	1.06E+01	4.46E-01	2.35E-01	1.75E-01	0.00E+00	2.25E-02
12.7mm X 108mm API	11,125	1.78E+00	2.76E+00	1.34E-01	2.14E-01	1.78E-01	7.30E-04	6.05E-02
12.7mm X 108mm API-T	4,375	7.00E-01	1.09E+00	5.25E-02	8.40E-02	7.00E-02	2.87E-04	2.38E-02
14.5mm X 114mm API	3,625	5.80E-01	8.99E-01	4.35E-02	6.96E-02	5.80E-02	2.38E-04	1.97E-02
14.5mm X 115mm API-T	1,563	2.50E-01	3.88E-01	1.88E-02	3.00E-02	2.50E-02	1.03E-04	8.50E-03
23mm X 152mm API-T	2,894	7.64E+00	1.99E+00	4.63E-01	9.03E+00	5.79E+00	0.00E+00	2.55E-02
30mm X 165mm AP-T	2,563	1.06E+01	2.77E+00	6.44E-01	1.26E+01	8.05E+00	0.00E+00	3.54E-02
40mm X 365mm tP-T	725	1.00E+03	6.26E+02	1.09E+01	4.59E+01	4.18E+01	0.00E+00	2.13E+01
RPG-7 169		5.62E+02	3.38E+02	3.24E+00	1.32E+02	8.91E+01	1.54E+01	0.00E+00
RPG-22 174		5.78E+02	3.48E+02	3.34E+00	1.36E+02	9.17E+01	1.58E+01	0.00E+00
S-5 Rocket	106	2.04E+02	1.28E+02	2.21E+00	9.35E+00	8.50E+00	0.00E+00	4.34E+00
#/y	r	**2.08E+04**	**5.72E+03**	**3.93E+0 2**	**3.72E+03**	**1.45E+0 3**	**4.09E+01**	**4.38E+01**
tp	y	**1.03E+01**	**2.86E+00**	**1.96E-01**	**1.86E+00**	**7.25E-01**	**2.05E-02**	**2.19E-02**

In the summary ordnance emission tables in Appendix G (Table 4 for both alternatives), the following changes would need to be made to reflect the proposed mission changes at the Aircraft Survivability Laboratory.

Table 12. Summary of Preferred Alternative Impacts

Air District	CO_2 CO		NO_X PM	$_{10}$ PM	$_{2.5}$ SO	$_2$ Pb	
Eastern Kern APCD	8.33E+00	3.55E-01	7.67E-03	5.54E-01	2.16E-02	1.07E-03	1.08E-02
Mojave Desert AQMD	2.06E+01	4.91E-01	3.13E-02	1.65E+00	2.36E-02	2.26E-03	1.10E-02
Great Basin AQMD	1.03E+01	2.86E+00	1.96E-01	1.86E+00	7.25E-01	2.05E-02	2.19E-02
Total (tpy)	2.89E+01	3.71E+00	2.35E-01	4.06E+00	7.70E-01	2.38E-02	4.37E-02

Energetics Emission Factors

Table - 13
Mojave Desert AQMD Energetic Materials - Baseline
Emission Factors

Explosive	**#/yr**	**unit**	**Source**	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
C-4	570	lb	EPA 98	9.70E-01	4.40E-03	5.90E-05	6.80E-02	0.00E+00	1.00E-04	0.00E+00
HE	16059	lb NEW	EPA 98	1.40E+00	9.50E-03	6.60E-05	7.20E-02	0.00E+00	1.40E-04	0.00E+00
Squibs	254	lb	AP-42	5.30E-01	1.80E-02	2.30E-02	4.70E-01	3.30E-01	4.20E-06	0.00E+00
Gun powder	1905	lb	EPA 98	8.70E-01	1.60E-03	0.00E+00	1.80E-03	0.00E+00	6.10E-04	0.00E+00
Propellant	631249	lb NEW	EPA 98	7.70E-01	6.60E-04	4.70E-04	1.20E-03	0.00E+00	1.20E-04	0.00E+00

Tempo source: NAVAIR RCMP Data Book Table 7

Table - 14
Great Basin AQMD Energetic Materials - Baseline
Emission Factors

Explosive	**#/yr**	**unit**	**Source**	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
C-4	525	lb	EPA 98	9.70E-01	4.40E-03	5.90E-05	6.80E-02	0.00E+00	1.00E-04	0.00E+00
Data Sheet.125	280	lb	EPA 98	8.73E-01	3.96E-03	5.31E-05	6.12E-02	0.00E+00	9.00E-05	0.00E+00
Det. Cord	12099	ft	AP-42	3.50E-02	3.29E-04	4.90E-05	1.12E-03	7.70E-05	0.00E+00	5.10E-07
Dynamite	112	charges	AP-42	1.20E+00	4.80E-03	1.30E-02	2.50E-02	1.40E-02	4.00E-05	2.00E-04
Exrod	56	caps	AP-42	8.20E-04	2.90E-04	7.10E-05	4.90E-04	3.40E-04	0.00E+00	2.60E-04
HE	5854	lb NEW	EPA 98	1.40E+00	9.50E-03	6.60E-05	7.20E-02	0.00E+00	1.40E-04	0.00E+00
Satchel charge, C-4	84	charges	EPA 98	1.94E+01	8.80E-02	1.18E-03	1.36E+00	0.00E+00	2.00E-03	0.00E+00
Smoke grenade	112	grenades	AP-42	3.30E-02	4.60E-02	1.00E-03	6.80E-01	1.10E-01	1.20E-04	4.70E-04
TNT	33112	lb	EPA 98	1.40E+00	9.50E-03	6.60E-05	7.20E-02	0.00E+00	1.40E-04	0.00E+00

Energetics Emissions – Baseline

Table - 15
Annual Emissions - Mojave Desert AQMD (MDAQMD) - Baseline

Explosive	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
C-4	5.53E+02	2.51E+00	3.36E-02	3.88E+01	0.00E+00	5.70E-02	0.00E+00
HE	2.25E+04	1.53E+02	1.06E+00	1.16E+03	0.00E+00	2.25E+00	0.00E+00
Squibs	1.35E+02	4.57E+00	5.84E+00	1.19E+02	8.38E+01	1.07E-03	0.00E+00
Gun powder	1.66E+03	3.05E+00	0.00E+00	3.43E+00	0.00E+00	1.16E+00	0.00E+00
Propellant	4.86E+05	4.17E+02	2.97E+02	7.57E+02	0.00E+00	7.57E+01	0.00E+00
Totals (lb/yr)	5.11E+05	5.79E+02	3.04E+02	2.08E+03	8.38E+01	7.92E+01	0.00E+00
Totals (tpy)	2.55E+02	2.90E-01	1.52E-01	1.04E+00	4.19E-02	3.96E-02	0.00E+00

Table - 16
Annual Emissions - Great Basin AQMD (GBAQMD) - Baseline

Explosive	**#/yr**	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
C-4	525	5.09E+02	2.31E+00	3.10E-02	3.57E+01	0.00E+00	5.25E-02	0.00E+00
Data Sheet.125	280	2.44E+02	1.11E+00	1.49E-02	1.71E+01	0.00E+00	2.52E-02	0.00E+00
Det. Cord	12099	4.23E+02	3.98E+00	5.93E-01	1.36E+01	9.32E-01	0.00E+00	6.17E-03
Dynamite	112	1.34E+02	5.38E-01	1.46E+00	2.80E+00	1.57E+00	4.48E-03	2.24E-02
Exrod	56	4.59E-02	1.62E-02	3.98E-03	2.74E-02	1.90E-02	0.00E+00	1.46E-02
HE	5854	8.20E+03	5.56E+01	3.86E-01	4.21E+02	0.00E+00	8.20E-01	0.00E+00
Satchel charge, C-4	84	1.63E+03	7.39E+00	9.91E-02	1.14E+02	0.00E+00	1.68E-01	0.00E+00
Smoke grenade	112	3.70E+00	5.15E+00	1.12E-01	7.62E+01	1.23E+01	1.34E-02	5.26E-02
TNT	33112	4.64E+04	3.15E+02	2.19E+00	2.38E+03	0.00E+00	4.64E+00	0.00E+00
Totals (lb/yr)		5.75E+04	3.91E+02	4.88E+00	3.07E+03	1.48E+01	5.72E+00	9.58E-02
Totals (tpy)		2.87E+01	1.95E-01	2.44E-03	1.53E+00	7.42E-03	2.86E-03	4.79E-05

Table - 17
Total Annual Emissions from Energetics (tpy)- Baseline

Air District	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
MDAQMD	2.55E+02	2.90E-01	1.52E-01	1.04E+00	4.19E-02	3.96E-02	0.00E+00
GBAQMD	2.87E+01	1.95E-01	2.44E-03	1.53E+00	7.42E-03	2.86E-03	4.79E-05
Total	2.84E+02	4.85E-01	1.54E-01	2.57E+00	4.93E-02	4.25E-02	4.79E-05

Energetics Emissions – Proposed Alternative

Table - 18
Annual Emissions - Mojave Desert AQMD (MDAQMD) - Preferred Alternative

Explosive	**#/yr**	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
C-4	713	6.91E+02	3.14E+00	4.20E-02	4.85E+01	0.00E+00	7.13E-02	0.00E+00
HE	20074	2.81E+04	1.91E+02	1.32E+00	1.45E+03	0.00E+00	2.81E+00	0.00E+00
Squibs	318	1.68E+02	5.72E+00	7.30E+00	1.49E+02	1.05E+02	1.33E-03	0.00E+00
Gun powder	2381	2.07E+03	3.81E+00	0.00E+00	4.29E+00	0.00E+00	1.45E+00	0.00E+00
Propellant	789061	6.08E+05	5.21E+02	3.71E+02	9.47E+02	0.00E+00	9.47E+01	0.00E+00
Totals (lb/yr)		6.39E+05	7.24E+02	3.80E+02	2.59E+03	1.05E+02	9.90E+01	0.00E+00
Totals (tpy)		3.19E+02	3.62E-01	1.90E-01	1.30E+00	5.24E-02	4.95E-02	0.00E+00

Table - 19
Annual Emissions - Great Basin AQMD (GBAQMD) - Preferred Alternative

Explosive	**#/yr**	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
C-4	656	6.37E+02	2.89E+00	3.87E-02	4.46E+01	0.00E+00	6.56E-02	0.00E+00
Data Sheet.125	350	3.06E+02	1.39E+00	1.86E-02	2.14E+01	0.00E+00	3.15E-02	0.00E+00
Det. Cord	15124	5.29E+02	4.98E+00	7.41E-01	1.69E+01	1.16E+00	0.00E+00	7.71E-03
Dynamite	140	1.68E+02	6.72E-01	1.82E+00	3.50E+00	1.96E+00	5.60E-03	2.80E-02
Exrod	70	5.74E-02	2.03E-02	4.97E-03	3.43E-02	2.38E-02	0.00E+00	1.82E-02
HE	7318	1.02E+04	6.95E+01	4.83E-01	5.27E+02	0.00E+00	1.02E+00	0.00E+00
Satchel charge, C-4	105	2.04E+03	9.24E+00	1.24E-01	1.43E+02	0.00E+00	2.10E-01	0.00E+00
Smoke grenade	140	4.62E+00	6.44E+00	1.40E-01	9.52E+01	1.54E+01	1.68E-02	6.58E-02
TNT	41390	5.79E+04	3.93E+02	2.73E+00	2.98E+03	0.00E+00	5.79E+00	0.00E+00
Totals (lb/yr)		7.19E+04	4.88E+02	6.10E+00	3.83E+03	1.85E+01	7.15E+00	1.20E-01
Totals (tpy)		3.59E+01	2.44E-01	3.05E-03	1.92E+00	9.27E-03	3.57E-03	5.99E-05

Table - 20
Total Annual Emissions from Energetics (tpy)- Preferred Alternative

Air District	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
MDAQMD	3.19E+02	3.62E-01	1.90E-01	1.30E+00	5.24E-02	4.95E-02	0.00E+00
GBAQMD	3.59E+01	2.44E-01	3.05E-03	1.92E+00	9.27E-03	3.57E-03	5.99E-05
Total	3.55E+02	6.06E-01	1.93E-01	3.21E+00	6.17E-02	5.31E-02	5.99E-05

Summary of Ordnance and Energetics Emissions

Table - 21

Total Emissions (Ordnance and Energetics) - Baseline

	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
Ordnance	3.09E+01	2.21E+00	1.61E-01	2.26E+00	8.07E-02	3.53E-03	2.25E-02
Energetics	2.84E+02	4.85E-01	1.54E-01	2.57E+00	4.93E-02	4.25E-02	4.79E-05
Total Emissions	3.15E+02	2.69E+00	3.15E-01	4.83E+00	1.30E-01	4.60E-02	2.26E-02

Table - 22

Total Emissions (Ordnance and Energetics) - Preferred

	CO2	CO	NOX	PM10	PM2.5	SO2	Lead
Ordnance	3.86E+01	2.76E+00	2.01E-01	2.82E+00	1.00E-01	4.41E-03	2.82E-02
Energetics	3.55E+02	6.06E-01	1.93E-01	3.21E+00	6.17E-02	5.31E-02	5.99E-05
Total Emissions	3.94E+02	3.37E+00	3.94E-01	6.03E+00	1.62E-01	5.75E-02	2.82E-02

Attachment 4
Range Vehicle Exhaust and Unpaved Roadway Fugitive Dust Emissions Analysis Support Data

Vehicle Exhaust Emissions

Vehicle Type	Total Annual VMT*	Fuel Type	Vehicle Fuel Usage %	VMT Unpaved Road Light Duty Trucks	Emission Factor** (Lb/Mile)							Vehicle Exhaust Emissions (Tons)						
					VOC	NOx	CO	PM2.5	PM10	CO2	SO2	VOC	NOx	CO	PM2.5	PM10	CO2	SO2
LDT2	189540.00	Gasoline	0.80	151632.00	0.000293	0.000683	0.00791	8.38E-05	0.000119	1.16069	1.1E-05	0.0222	0.0518	0.5997	0.0064	0.0090	87.9988	0.0008
		Diesel	0.20	37908.00	0.000342	0.002319	0.001649	0.000212	0.000258	0.77505	6.61E-06	0.0065	0.0440	0.0313	0.0040	0.0049	14.6903	0.0001
										Total		0.0287	0.0958	0.6310	0.0104	0.0139	102.6892	0.0010
Note:										**Metric Ton**							93.4471	
LDT2 - Light duty trucks										**Proposed (x1.25)**		0.03588	0.11972	0.78872	0.01295	0.01739	128.361	0.0012
* Based on parameters provided in NAWS China Lake 2010 Title V fee worksheet										**Metric Ton**							116.809	
** Emission factors provided by EMFAC model provided by the California Air Resources Board																		

Unpaved Road Fugitive Dust Calculations:

E=k (s/12)^a x (S/30)^d / (M/0.5)^c - C

Given:
E = size-specific emission factor (lb/VMT)
s= surface material silt content (%) = 5%*
S = mean vehicle speed (mph) = 25 mph
a = 1**
d = 0.5**
M = surface material moisture content (%) = 0.5***
c = 0.2**
C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear. 0.00036 lb/VMT for PM2.5 and 0.00047 lb/VMT for PM10
k = 0.18 lb/VMT for PM2.5 and 1.8 for PM10**

Vehicle Fugitive Dust Emissions

Vehicle Type	Total Annual VMT*	Fuel Type	Vehicle Fuel Usage %	VMT Unpaved Road Light Duty Trucks	Emission Factor (Lb/Mile)		Vehicle Emissions on Unpaved Roads (Tons)	
					PM2.5	PM10	PM2.5	PM10
LDT2	189540.00	Gasoline	0.80	151632.00	0.07	0.68	5.163473	51.87203
		Diesel	0.20	37908.00	0.07	0.68	1.290868	12.96801

Notes:
Fugitive dust factor for unpaved roads based on AP-42 ch. 13.2.2
* Based on parameters provided in NAWS China Lake 2010 Title V fee worksheet
** For public roads
*** Default moisture content assumed for very dry unpaved roads

Total of Ground Vehicle Emission

	PM2.5	PM10
	(tpy)	(tpy)
Gasoline (Exhuast)	0.0064	0.0090
Diesel (Exhuast)	0.0040	0.0049
Gasoline (unpaved Dust)	5.1635	51.8720
Diesel (unpaved Dust)	1.2909	12.9680
Total	6.46	64.85

	PM2.5	PM10
Proposed (x 1.25)	8.08088	81.06745

Attachment 5
Other Stationary Source Emissions Support Data

Emission Year **2010**	**Title V Fee Inventory** **Throughput, Emission Factors (EF), and Annual Emission Rates (AER)** Company: **NAWS China Lake** Facility ID: **14**									
Device ID	Annual Throughput (units)		**Emittants**							
			ROG	PM10	NOx	SOx	Lead	HAPs	CO2	CO
BC Open Burn	0.00	EF	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	pounds OB	AER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BC Open Detonation	0.00	EF	3.64E-03	0.00E+00	2.34E-02	3.04E-04	2.79E-05	8.84E-03	0.00E+00	0.00E+00
	pounds OD	AER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OB/OD Fugitive Dust	0		0.00E+00	1.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	pounds	AER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BC Test Arenas	0.00	EF	2.31E-03	0.00E+00	2.53E-02	0.00E+00	0.00E+00	3.05E-03	0.00E+00	0.00E+00
	pounds	AER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Cactus Flats	0.00	EF	2.86E-03	0.00E+00	2.90E-02	0.00E+00	0.00E+00	3.63E-03	0.00E+00	0.00E+00
	pounds	AER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lower Cactus Flats	0.00	EF	2.86E-03	0.00E+00	2.90E-02	0.00E+00	0.00E+00	3.56E-03	0.00E+00	0.00E+00
	pounds	AER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portable Range Gens	11.85	EF	4.93E+01	4.25E+01	6.04E+02	5.33E+00	8.30E-03	3.41E+00	22468	1.30E+02
	1000 gal	AER	584.40	503.80	7,159.82	63.18	0.10	40.42	266,335.67	1,542.80
JR So 40 Gens	30.0379	EF	4.93E+01	4.25E+01	6.04E+02	5.33E+00	8.30E-03	3.41E+00	22468	1.30E+02
	1000 gal	AER	1,480.87	1,276.61	18,142.89	160.10	0.25	102.42	674,891.54	3,909.43
Pinion Peak Gens	21.02	EF	4.93E+01	4.25E+01	6.04E+02	5.33E+00	8.30E-03	3.41E+00	22468	1.30E+02
	1000 gal	AER	1,036.12	893.21	12,694.09	112.02	0.17	71.66	472,203.22	2,735.32
Construction	10.00	EF	0.00E+00	4.32E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	acre-month	AER	0.00	4,320.00	0.00	0.00	0.00	0.00	0.00	0.00
Unpaved Roadways	0	EF	0.00E+00	3.40E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
(inc. const-related)	VMT	AER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JR Gas Tank	1.21	EF	8.31E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	1000 gal	AER	10.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JCIF Gas Tank	4.20	EF	8.31E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	1000 gal	AER	34.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Space Heating	7.355	EF	6.00E-01	2.60E-01	8.80E+00	5.20E-02	0.00E+00	9.20E-03	22,300	5
	1000 gal	AER	4.41	1.91	64.72	0.38	0.00	0.07	164,016.50	3.00
	Pollutant Totals (pounds)		3,140.72	6,995.53	38,061.52	335.69	0.52	214.56	1,577,446.92	8,190.55

Inyo County	Pollutant Total (tons)		1.57	3.50	19.03	0.17	0.00	0.11	788.72	4.10
HARP-EKAPCD	Pollutant Total (tons)		13.82	3.21	10.8	0.23	0.08		639.12	6.42
HARP-MDAQMD	Pollutant Total (tons)		0.62	3.6	14.57	0.27	0.16		767.12	21.22
Three Permit Combined (tons)			16.01	10.31	44.40	0.67	0.24	0.11	2194.96	31.74
									1997.42	(Metric Ton)
Proposed (x1.25)			20.01	12.88	55.50	0.83	0.30	0.13	2743.70	39.67
									2496.77	(Metric Ton)

Attachment 6
Record of Non-Applicability

RECORD OF NON-APPLICABILITY
OF THE
CLEAN AIR ACT - GENERAL CONFORMITY RULE
FOR
RENEWAL OF NAVAL AIR WEAPONS STATION CHINA LAKE PUBLIC LAND WITHDRAWAL AT NAVAL AIR WEAPONS STATION CHINA LAKE, CALIFORNIA

The Clean Air Act (CAA) requires federal actions in air pollutant non-attainment or maintenance areas to conform to an applicable State Implementation Plan (SIP). The SIP is designed to achieve or maintain air quality that meets (or "attains") the various National Ambient Air Quality Standards (NAAQS). The regulations governing this requirement are found in 40 CFR Parts 51 and 93, also known as the "General Conformity Rule." Naval Air Weapons Station China Lake is located in the Indian Wells Valley and Coso Junction PM10 maintenance areas, the Trona and San Bernardino County PM10 moderate nonattainment areas, and the Owens Valley PM10 serious nonattainment area in California. As a result, the proposed action must comply with the requirements of the General Conformity Rule.

The proposed action includes Congressional renewal of the land withdrawal (25-year renewal) for Naval Air Weapons Station China Lake; revision and implementation of the installation's Comprehensive Land Use Management Plan; and accommodation of a potential increase in operations tempo (up to 25 percent increase) within current land use areas approved for designated uses, expansion of development of unmanned aerial and surface systems, expansion of existing and introduction of evolving directed-energy weapons development. The Navy has previously submitted its proposal for the renewal of the public land withdrawal for NAWS China Lake to Congress, in accordance with applicable law. The land withdrawal renewal has been approved, with the signing of the Fiscal Year 2014 National Defense Authorization Act on December 26, 2013. (The Navy will issue a Record of Decision pursuant to the National Environmental Policy Act with respect to the remaining components of the proposed action.)

Provisions in the CAA regulations (40 CFR Sect 93.153(c)(1)) allow for exemptions from performing a conformity determination if total emissions of individual non-attainment or maintenance area pollutants resulting from the action fall below specific threshold values (i.e., *de minimis* levels). As demonstrated by the information in Table 1, the total change in the levels of PM10 caused by this proposed action (in all areas combined) does not exceed the *de minimis* levels of 70 tons per year for a serious nonattainment area or 100 tons per year for a moderate nonattainment area or a attainment/maintenance area. Therefore, the action is exempt from the requirements of the General Conformity Rule.

To the best of my knowledge, the information provided is correct and accurate and I concur in the finding that the proposed action will conform to the applicable SIP.

John O'Toole 7-17-14

Approved by Date

RENEWAL OF NAVAL AIR WEAPONS STATION CHINA LAKE PUBLIC LAND WITHDRAWAL

AT NAVAL AIR WEAPONS STATION CHINA LAKE, CALIFORNIA

AIR QUALITY CALCULATIONS FOR NONATTAINMENT AND ATTAINMENT/MAINTENANCE CRITERIA POLLUTANTS

To evaluate changes to air quality as a result of this action, emissions of PM_{10} pollutant were considered. The projected net changes associated with implementing the Proposed Action are shown in Table 1.

Table 1. Total Annual Net Increase in PM_{10} Emissions under the Proposed Action

Operational Activity	**Proposed PM_{10} Increment (tpy)**
Armitage Airfield Aircraft	13.3
Range Flight	-0.4
Munitions	1.2
Vehicle on Unpaved Roads	16.2
Other Stationary Sources	2.6
Total	**32.9**
de minimis level	**70/100**

APPENDIX H

AGENCY COORDINATION/CONSULTATION

DEPARTMENT OF THE NAVY
NAVAL AIR WEAPONS STATION
1 ADMINISTRATION CIRCLE
CHINA LAKE CA 93555-6100

IN REPLY REFER TO:

5090
Ser PR241/224
March 9, 2012

Mr. Milford Wayne Donaldson, FAIA, State Historic Preservation Officer
California Department of Parks and Recreation
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

Dear Mr. Donaldson:

Subject: NAVAL AIR WEAPONS STATION CHINA LAKE EIS/LEIS

This letter serves to initiate consultation pursuant to 36 CFR 800.8 regarding the Naval Air Weapons Station (NAWS) China Lake's development of an Environmental Impact Statement/ Legislative Environmental Impact Statement (LEIS/EIS). The EIS/LEIS is required for the renewal application for the reauthorization of Navy's continued use of public withdrawn lands to support its mission at NAWS China Lake.

Specifically this document will analyze the potential impacts of three alternatives under consideration by the Navy on cultural resources within the Installation boundaries. The Preferred Alternative provides for the continuation of military operations and up to a 25% increase in operational tempo. Mitigation, inventory, and consultation requirements associated with any potential impacts indentified in the LEIS/EIS analysis will be consistent with the procedural requirements found within the 2011 Draft Integrated Cultural Resources Management Plan which your office has reviewed and is currently engaged in consultation with NAWS.

The Draft LEIS/EIS is scheduled for release in May 2012. This will begin the 90 day public and agency review cycle. Should you have any questions prior to the receipt of the Draft

5090
Ser PR241/224
March 9, 2012

LEIS/EIS, please contact our Cultural Resources Program Manger, Mr. Mike Baskerville at 760-939-1350.

Sincerely,

JOHN O'GARA
Head, Environmental Management Division
By direction of
the Commanding Officer

DEPARTMENT OF THE NAVY
NAVAL AIR WEAPONS STATION
1 ADMINISTRATION CIRCLE
CHINA LAKE CA 93555-6100

IN REPLY REFER TO:

5090
[redacted]
March 9, 2012

Ms. Diane K. Noda
Fish and Wildlife Service
Ventura Fish and Wildlife Service
2493 Portola Road, Suite B
Ventura, California 93003

Dear Ms Noda:

Subject: NAVAL AIR WEAPONS STATION CHINA LAKE ENVIRONMENTAL IMPACT STATEMENT/LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT

This letter serves to initiate consultation pursuant to section 7 of the Endangered Species Act of 1973, as amended (Act) regarding the Naval Air Weapons Station (NAWS) China Lake's development of an Environmental Impact Statement/Legislative Environmental Impact Statement (EIS/LEIS) for the Renewal of the Naval Air Weapons Station China Lake Public Land Withdrawal. This document supports the renewal application for the reauthorization of Navy's continued use of public withdrawn lands to support its mission at NAWS China Lake.

Specifically the document will analyze the potential impacts of the three alternatives under consideration by the Navy on natural resources within the Installation boundaries. The Preferred Alternative provides for continuation of military operations and up to a 25% increase in operational tempo. Mitigation, inventory, and consultation requirements associated with any potential impacts to protected resources indentified in the EIS/LEIS analysis will be consistent with the procedural requirements found in the Act.

We request that a meeting be scheduled as soon as possible to discuss specific components of the proposed action and develop an approach for completing the consultation. The Draft EIS/LEIS is scheduled for release in July 2012. This will begin the 90 day public and agency review cycle.

Please contact me if you have questions regarding the undertaking in general. I can be reached at 760-939-3213 or

john.ogara@navy.mil. Mr. Tom Campbell is our technical point of contact for inquiries regarding natural resources at NAWS. He can be reached at 760-939-3222 or tom.campbell@navy.mil.

Sincerely,

JOHN O'GARA
Head, Environmental Management Division
By direction of
the Commanding Officer

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
08EVEN00-2012-TA-0396

June 22, 2012

John O'Gara
Environmental Program Director
Naval Air Weapons Station
1 Administration Circle
China Lake, California 93555

Subject: Acknowledgment of Request to Initiate Formal Consultation on Naval Air Weapons Station China Lake Public Land Withdrawal, Kern County, California (Ser PR241/397)

Dear Mr. O'Gara:

This letter acknowledges our May 30, 2012, receipt of your May 24, 2012, request for formal consultation, pursuant to section 7 of the Endangered Species Act of 1973, as amended (Act). The Naval Air Weapons Station (NAWS), China Lake, has provided a biological assessment regarding the Navy's application for reauthorization of the continued use of public withdrawn lands to support its mission at NAWS China Lake. The consultation concerns the potential effects associated with the Navy's activity at NAWS China Lake on the federally threatened desert tortoise (*Gopherus agassizii*) and Inyo California towhee (*Pipilo crissalis eremophilus*), and the endangered Mohave tui chub (*Siphateles bicolor mohavensis*). Critical habitats for desert tortoise and Inyo California towhee will also be addressed in this consultation. We have assigned log number 8-8-12-F-29 to this consultation. Please refer to that number in any future correspondence on this consultation.

The regulations that implement section 7(a)(2) allow the U.S. Fish and Wildlife Service up to 90 days to conclude formal consultation with your agency and an additional 45 days to prepare our biological opinion [50 CFR 402.14(e)]. Our current staffing level and workload may preclude us from completing formal consultation and the biological opinion within the 135 days provided by the regulations; however, we will address your request as soon as we are able and do our best to issue our biological opinion in a timely manner.

As a reminder, the Act requires that after initiation of formal consultation, the lead Federal agency may make no irreversible or irretrievable commitment of resources that could preclude the formulation or implementation of reasonable and prudent alternatives to avoid jeopardizing the continued existence of endangered or threatened species or destroying or adversely modifying critical habitat.

If you have any questions about this consultation or the consultation process in general, please contact Jenna Castle of my staff at (805) 644-1766, extension 320.

Sincerely,

Carl T. Benz
Assistant Field Supervisor

-----Original Message-----
From: Stratton, Susan@Parks [mailto:Susan.Stratton@parks.ca.gov]
Sent: Friday, July 26, 2013 1:02 PM
To: O'Gara, John E CIV NAVFACSW, GRDK39/OPDK
Cc: Baskerville, Michael C CIV NAVFAC SW; Army, Nancy E CIV NAVFAC SW, Environmental; Clemente, Hiphil S CIV NAVFAC SW; Waters, Michael R CIV NAVFAC SW, SW09C; Ravan, Melanie D CIV REC Counsel San Diego, N00; Tozer, Tristan@Parks
Subject: RE: Closure of Consultations

John,

As discussed, the execution of the PA with NAWS China Lake for the implementation of the ICRMP completes the Section 106 consultation process for the National Historic Preservation Act. Additionally, the completion of the Section 106 process also concludes our review of your EIS/LEIS. We look forward to our continued consultations with you and your staff and commend the efforts that NAWS China Lake Command puts forth in their site stewardship responsibilities of the world class resources contained within the boundaries of NAWS China Lake. The cultural heritage program at NAWS China Lake is a shining example of what we here at the Office of Historic Preservation would like to see at other installations throughout California.

Regards,
Susan

Susan K Stratton, Ph.D.
Supervisor, Review & Compliance

Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

Phone: 916.445.7023
Cell: 916.997.7865
Fax: 916.445.7053

NOTE: New Email Address - susan.stratton@parks.ca.gov

APPENDIX I

NOISE

APPENDIX I

NOISE

1.0 NOISE METRICS

Noise, as used in this context, refers to sound pressure variations audible to the ear. The audibility of a sound depends on the amplitude and frequency of the sound, and the individual's capability to hear the sound. Whether the sound is judged as noise depends largely on the listener's current activity and attitude toward the sound source, as well as the amplitude and frequency of the sound. The range in sound pressures that the human ear can comfortably detect encompasses a wide range of amplitudes, typically a factor larger than 1 million. To obtain convenient measurements and sensitivities at extremely low- and high-sound pressures, sound is measured in units of the dB. The dB is a dimensionless unit related to the logarithm of the ratio of the measured level to a reference level.

Because of the logarithmic nature of the decibel unit, sound levels cannot be added or subtracted directly. However, the following shortcut method can be used to combine sound levels:

Difference between two dB values	Add the following to the higher level
0 to 1	3
2 to 3	2
4 to 9	1
10 or more	0

The ear is not equally sensitive at all frequencies of sound. At low frequencies, characterized as a rumble or roar, the ear is not very sensitive; while at higher frequencies, characterized as a screech or a whine, the ear is most sensitive. The A-weighted sound level (dBA) was developed to measure and report sound levels in a way that would more closely approach how people perceive the sound. All sound levels reported herein are in terms of dBA.

Environmental sound levels typically vary with time. This is especially true for areas near airports where noise levels will increase substantially as the aircraft passes overhead, and afterwards diminish to typical community levels. Both the Department of Defense and the FAA have specified the following noise metrics to describe aviation noise.

DNL is the 24-hour energy average A-weighted sound level with a 10-dB weighting added to those levels occurring between 10:00 p.m. and 7:00 a.m. the following morning. The 10 dB weighting is a penalty representing the added intrusiveness of noise during normal sleeping hours. DNL is used to determine land use compatibility with noise from aircraft and surface traffic. The expression L_{dn} is often used in equations to designate day-night average sound level.

Community Noise Equivalent Level (CNEL) is unique to the State of California and is DNL with an additional 5-dB weighting added to those levels occurring between 7 p.m. and 10 p.m. For most transportation and community noise sources, the CNEL and DNL are equal to within 1 dB. CNEL uses the same criteria as DNL to determine land use compatibility with noise from aircraft and surface traffic.

Maximum Sound Level is the highest instantaneous sound level observed during a single noise event, no matter how long the sound may persist (Figure J-1).

Sound Exposure Level (SEL) value represents the A-weighted sound level integrated over the entire duration of the event and referenced to a duration of 1 second. Hence, it normalizes the event to a 1-second event. Typically, most events (e.g., aircraft flyover) last longer than 1 second, and the SEL value will be higher than the maximum sound level of the event. Figure J-1 illustrates the relationship between the maximum sound level and SEL.

2.0 ASSESSMENT CRITERIA

Criteria for assessing the effects of noise include annoyance, speech interference, sleep disturbance, noise-induced hearing loss, possible nonauditory health effects, reaction by animals, and land use compatibility.

These criteria are often developed using statistical methods. The validity of generalizing statistics derived from large populations is suspect when these statistics are applied to small sample sizes as they have been in the affected areas near NAWSCL.

2.1 ANNOYANCE DUE TO SUBSONIC AIRCRAFT NOISE

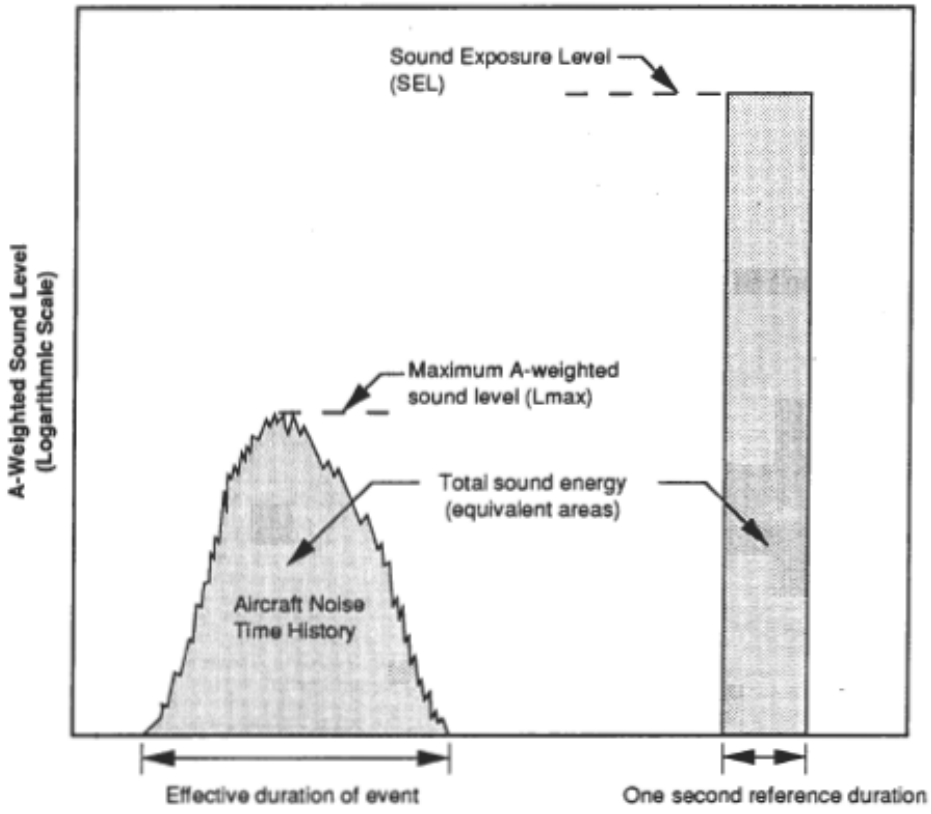
Noise-induced annoyance is an attitude or mental process with both acoustic and nonacoustic determinants (Fidell et al., 1988). Noise-induced annoyance is perhaps most often defined as a generalized adverse attitude toward noise exposure. Noise annoyance is affected by many factors including sleep and speech interference and task interruption. The level of annoyance may also be affected by many nonacoustic factors.

In communities in which the prevalence of annoyance is affected primarily by noise, reductions in exposure can be expected to lead to reductions in prevalence of annoyance. In communities in which the prevalence of annoyance is controlled by nonacoustic factors (e.g., odor, traffic congestion), there may be little or no reduction in annoyance associated with reductions in exposure. The intensity of community response to noise exposure may even, in some cases, be essentially independent of physical exposure. In the case of community response to actions, such as airport siting or scheduling of supersonic transport aircraft, vigorous reaction has been encountered at the mere threat of exposure, or minor increases in exposure.

The standard method for determining the prevalence of annoyance in noise-exposed communities is by attitudinal survey. Surveys generally solicit self-reports of annoyance through one or more questions of the form "How bothered or annoyed have you been by the noise of (noise source) over the last (time period)?" Respondents are typically constrained in structured interviews to select one of a number of response alternatives, often named categories such as "Not At All Annoyed," "Slightly Annoyed," "Moderately Annoyed," "Very Annoyed," or "Extremely Annoyed." Other means are sometimes used to infer the prevalence of annoyance from survey data (for example, by interpretation of responses to activity interference questions or by construction of elaborate composite indices), with varying degrees of face validity and success.

Predictions of the prevalence of annoyance in a community can be made by extrapolation from an empirical dosage-effect relationship. Based on the results of a number of sound surveys, Schultz (1978) developed a relationship between percent highly annoyed and DNL:

$$\%\ \textit{Highly Annoyed} = 0.8553\ \mathrm{DNL} - 0.0401\ \mathrm{DNL}^2 + 0.00047\ \mathrm{DNL}^3$$



Sound Exposure Level (SEL) and Comparison to Aircraft Noise Time History

Figure I-1

Note that this relationship should not be evaluated outside the range of DNL = 45 to 90 dB. Figure J-2 presents this equation graphically. Less than 15 to 20 percent of the population would be predicted to be annoyed by DNL values less than 65 dB, whereas over 37 percent of the population would be predicted to be annoyed from DNL values greater than 75 dB. The relationship developed by Schultz was presented in the Guidelines for Preparing Environmental Impact Statements on Noise (National Academy of Science, 1977).

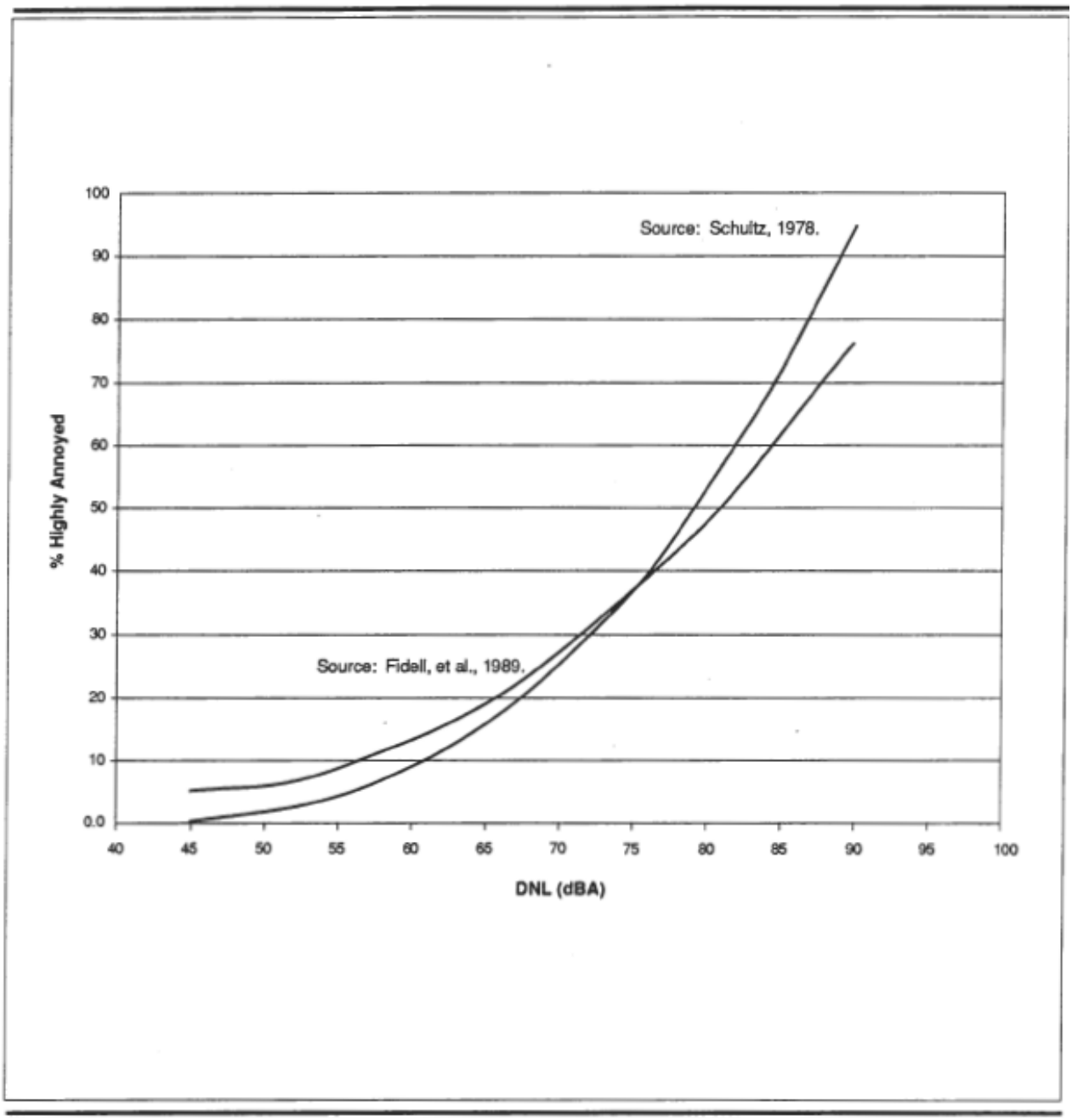
These results were reviewed (Fidell et al., 1989) and the original findings were updated, bringing the number of data points used in defining the relationship to over 400. The findings of the updated study differ only slightly from those of the original study.

2.2 Sonic Booms

When an object travels faster than the speed of sound in the surrounding air, the air in front of the object is compressed abruptly, forming a shock wave. This shock wave is a sudden increase in pressure, followed by a gradual decrease to below ambient pressure, then a sudden return to ambient atmospheric pressure. This pressure signature is sometimes described as an N-wave (other shapes can occur due to influences by the atmosphere or by interference effects of multiple N-waves). Aircraft within the Earth's atmosphere typically produce two shock waves as they travel at supersonic speeds; one at the nose and one at the tail. These N-waves produced by the vehicle can propagate to the ground where they are perceived as a "boom." If the two shock waves are separated by more than approximately 100 milliseconds, a double boom may be heard. When describing the magnitude of a sonic boom, it is conventional to use only the incremental increase in pressure (in terms of pounds per square foot [psf]) over ambient atmospheric pressure (approximately 2,116 psf at sea level). This quantity is termed "overpressure" and is denoted as P. Factors that affect the nature and extent of sonic boom overpressures include aircraft design, aircraft operation, and atmospheric effects. Aircraft design features that affect sonic boom formation include aircraft size, weight, and shape. The magnitude of the overpressure increases with the size and weight of the aircraft, while the duration of the sonic boom depends on the length of the aircraft.

Features of aircraft operations that influence the magnitude of sonic booms include altitude, Mach number (M), acceleration, and mode of flight. In general, for a given M, the lower the altitude of the supersonic flight, the greater the amplitude at any point on the ground. Increases in speed and acceleration may also increase the intensity of the boom. Aircraft flying supersonically in straight and level flight can produce a finite swath extending on both sides of the ground track where booms may be heard. These booms are called "carpet booms." Typical overpressures of carpet booms generated by military aircraft while cruising at high altitudes are on the order of 1.0 to 2.0 psf at the ground. The typical overpressures experienced during space shuttle landings over Southern California have been below 2 psf.

Pressure waves are generated when an object exceeds the speed of sound and thus are generated for all supersonic flights. However, these pressure waves do not always propagate to the ground where they are perceived as sonic booms. The propagation of the sonic boom through the atmosphere is subject to the well-known phenomenon of refraction (bending) due to temperature and wind speed gradients in the atmosphere. For certain combinations of Mach number, flight profile, and altitude, a boom may be generated, but conditions are such that the boom is refracted up and away before it reaches the ground surface. When the boom does reach the surface directly below the aircraft, there is a predictable lateral distance off the flight track of the aircraft where the refraction effects have diverted the boom upwards and the boom does not reach the ground. This distance is called the "cut-off."



Community Noise Annoyance Curves

Figure I-2

An N-wave-shaped sonic boom has a spectral content (relationship of sound level and frequency) with a low-frequency fundamental component that is related inversely to the length of the aircraft. The fundamental component is accompanied by a series of harmonic components that decrease in amplitude by 6 dB for each doubling of frequency. The fundamental frequency is in the range of a few Hz up to 10 Hz for vehicles ranging in size from a space shuttle to a small fighter airplane. Although humans do not hear the very low frequencies very well, they do feel vibration from these low frequencies and can particularly hear sounds produced by vibration induced within buildings.

While most noises are satisfactorily described by AL, the predominantly low-frequency nature of high-intensity impulsive sounds produced by sonic booms and explosions create greater sensation levels for humans than AL would normally indicate.

DOD has followed the recommendations of the National Research Council - Committee on Hearing, Bioacoustics and Biomechanics Assembly in describing high-intensity, impulsive sounds such as sonic booms and explosions in terms of C-weighted sound exposure level (CSEL). Impacts on the community noise environment due to a series of these events is quantified with the C-weighted day-night level. In contrast with A-weighting that suppresses low frequencies similarly to the response of human hearing, C-weighting allows more of the low-frequency energy in a sound signal to be measured.

Many studies have been conducted of effects of sonic booms on conventional (i.e., modern, inhabited) structures. The most common incidence of damage is to glass, plaster, and bric-a-brac.

2.3 SPEECH INTERFERENCE AND RELATED EFFECTS DUE TO AIRCRAFT FLYOVER NOISE

One of the ways that noise affects daily life is by preventing or impairing speech communication. In a noisy environment, understanding of speech is diminished by the masking of speech signals by intruding noises. Speakes generally raise their voices or move closer to listeners to compensate for masking noise in face-to-face communications, thereby increasing the level of speech at the listener's ear. As intruding noise levels rise higher and higher, speakers may cease talking altogether until conversation can be resumed at comfortable levels of vocal effort after noise intrusions end.

If the speech source is a radio or television, the listener may increase the volume during a noise intrusion. If noise intrusions occur repeatedly, the listener may choose to set the volume at a high level so that the program material can be heard even during noise intrusions.

In addition to losing information contained in the masked speech material, the listener may lose concentration because of the interruptions and thus become annoyed. If the speech message is some type of warning, the consequences could be serious.

Current practice in quantification of the magnitude of speech interference and predicting speech intelligibility ranges from metrics based on A-weighted sound pressure levels of the intruding noise alone to more complex metrics requiring detailed spectral information about both speech and noise intrusions. There are other effects of the reduced intelligibility of speech caused by noise intrusions. For example, if the understanding of speech is interrupted, performance may be reduced, annoyance may increase, and learning may be impaired.

As the noise level of an environment increases, people automatically raise their voices. The effect does not take place, however, if the noise event rises to a high level very suddenly.

2.3.1 Speech Interference Effects from Time-Varying Noise

Most research on speech interference due to noise has included the study of steady state noise. As a result, reviews and summaries of noise effects on speech communications concentrate on continuous or at least long duration noises (Miller, 1974). However, noise intrusions are not always continuous or of long duration, but are frequently transient in nature. Transportation noise generates many such noise intrusions, consisting primarily of individual vehicle pass-bys, such as aircraft flyovers. Noise emitted by other vehicles (e.g., motorboats and off-highway vehicles) is also transient in nature.

It has been shown, at least for aircraft flyover noise, that accuracy of predictors of speech intelligibility is ranked in a similar fashion for both steady state and time-varying or transient sounds (Williams et al., 1971; Kryter and Williams, 1966). Of course, if one measures the noise of a flyover by the maximum A-weighted level, intelligibility associated with this level would be higher than for a steady noise of the same value, simply because the level is less than the maximum for much of the duration of the flyover.

2.3.2 Other Effects of Noise that Relate to Speech Intelligibility

Aside from the direct effects of reduction in speech intelligibility, related effects may occur that tend to compound the loss of speech intelligibility itself.

Learning. One of the environments in which speech intelligibility plays a critical role is the classroom. In classrooms of schools exposed to aircraft flyover noise, speech becomes masked or the teacher stops talking altogether during an aircraft flyover (Crook and Langdon, 1974). Pauses begin to occur when instantaneous flyover levels exceed 60 dB. Masking of the speech of teachers who do not pause starts at about the same level.

At levels of 75 dB some masking occurs for 15 percent of the flyovers and increases to nearly 100 percent at 82 dB. Pauses occur for about 80 percent of the flyovers at this noise level. Since a marked increase in pauses and masking occurs when levels exceed 75 dB, this level is sometimes considered as one above which teaching is impaired due to disruption of speech communication. The effect that this may have on learning is unclear at this time. However, one study (Arnoult et al., 1986) could find no effect of noise on cognitive tasks from jet or helicopter noise over a range from 60 to 80 dBA, even though intelligibility scores indicated a continuous decline starting at the 60 dB level. In a Japanese study (Ando et al., 1975), researchers failed to find differences in mental task performance among children from communities with different aircraft noise exposure.

Although there seems to be no proof that noise from aircraft flyovers affects learning, it is reported by Mills (1975) that children are not as able to understand speech in the presence of noise as are adults. It is hypothesized that part of the reason is due to the increased vocabulary that the adult can draw on as compared to the more limited vocabulary available to the young student. Also, when one is learning a language, it is more critical that all words be heard rather than only enough to attain 95-percent sentence intelligibility, which may be sufficient for general conversations. It was mentioned above that when the maximum A-level for aircraft flyovers heard in a classroom exceeds 75 dB, masking of speech increases rapidly. However, it was also noted that pausing during flyovers and masking of speech for those teachers who continue to lecture during a flyover start at levels around 60 dB (Pearsons and Bennett, 1974).

Animals. Literature concerning the effects of noise on animals is not large, and most of the studies have focused on the relation between dosages of continuous noise and effects (Belanovskii and Omel'yanenko, 1982; Ames, 1974). A literature survey (Kull and Fisher, 1986) found that the literature is

inadequate to document long-term or subtle effects of noise on animals. No controlled study has documented any serious accident or mortality on livestock despite extreme exposure to noise.

Annoyance. Klatt, Stevens, and Williams (1969) studied the annoyance of speech interference by asking people to judge the annoyance of aircraft noise in the presence and absence of speech material. The speech material was composed of passages from newspaper and magazine articles. In addition to rating aircraft noise on an acceptability scale (unacceptable, barely acceptable, acceptable, and of no concern), the subjects were required to answer questions about the speech material. The voice level was considered to represent a raised voice level (assumed to be 68 dB). In general, for the raised voice talker, the rating of barely acceptable was given to flyover noise levels of 73 to 76 dB. However, if the speech level was reduced, the rating of the aircraft tended more toward unacceptable. The results suggested that if the speech level were such that 95 percent or better sentence intelligibility was maintained, then a barely acceptable rating or better acceptability rating could be expected. This result is in general agreement with the finding in schools that teachers pause or have their speech masked at levels above 75 dB (Crook and Langdon, 1974).

Hall, Taylor, and Birnie (1985) recently tried to relate various types of activity interference in the home, related to speech and sleeping, to annoyance. The study found that there is a 50 percent chance that people's speech would be interfered with at a level of 58 dB. This result is in agreement with the other results, considering that the speech levels in the school environment of the Cook study are higher than the levels typically used in the home. Also, in a classroom situation the teacher raises his or her voice as the flyover noise increases in intensity.

2.3.3 Predicting Speech Intelligibility and Related Effects Due to Aircraft Flyover Noise

It appears from the above discussions that when aircraft flyover noises exceed approximately 60 dB, speech communication may be interfered with either by masking or by pausing on the part of the talker. Increasing the level of the flyover noise to 80 dB would reduce the intelligibility to zero even if a loud voice is used by those attempting to communicate.

The levels mentioned above refer to noise levels measured indoors. The same noises measured outdoors would be 15 to 25 dB higher than these indoor levels during summer (windows open) and winter months (windows closed), respectively. These estimates are taken from Environmental Protection Agency (EPA) reviews of available data (U.S. Environmental Protection Agency, 1974).

Aircraft noise levels measured inside dwellings and schools near the ends of runways at airports may exceed 60 dB (75 dB outside). During flyovers, speech intelligibility would be degraded. However, since the total duration is short, no more than a few seconds during each flyover, only a few syllables may be lost. People may be annoyed, but the annoyance may not be due to loss in speech communication, but rather to startle or sleep disturbance as discussed below.

2.4 SLEEP DISTURBANCE DUE TO NOISE

The effects of noise on sleep have long been a concern of parties interested in assuring suitable residential noise environments. Early studies noted background levels in people's bedrooms in which sleep was apparently undisturbed by noise. Various levels between 25 to 50 dB were observed to be associated with an absence of sleep disturbance. The bulk of the research on noise effects on which the current relationship is based was conducted in the 1970s. The tests were conducted in a laboratory environment in which awakening was measured either by a verbal response or by a button push, or by brain wave recordings (electroencephalograms) indicating stages of sleep (and awakening). Various

types of noise were presented to the sleeping subjects throughout the night. These consisted primarily of transportation noises, including those produced by aircraft, trucks, cars and trains. The aircraft noises included both flyover noises and sonic booms. Synthetic noises, including laboratory-generated sounds consisting of shaped noises and tones, were also studied.

Lukas (1975) and Goldstein and Lukas (1980) both reviewed data available in the 1970s on sleep-stage changes and waking effects of different levels of noise. Since no known health effects were associated with waking or sleep-stage changes, either measure was potentially useful as a metric of sleep disturbance. However, since waking, unlike sleep-stage changes, is simple to quantify, it is often selected as the metric for estimating the effects of noise on sleep. These two reviews showed great variability in the percentage of people awakened by exposure to noise. The variability is not merely random error, but reflects individual differences in adaptation or habituation, and also interpretation of the meaning of the sounds. Such factors cannot be estimated from the purely acoustic measures in noise exposure.

Another major review, by Griefahn and Muzet (1978), provided similar information for effects of noise on waking. However, Griefahn and Muzet's results suggested less waking for a given level of noise than predicted by Lukas.

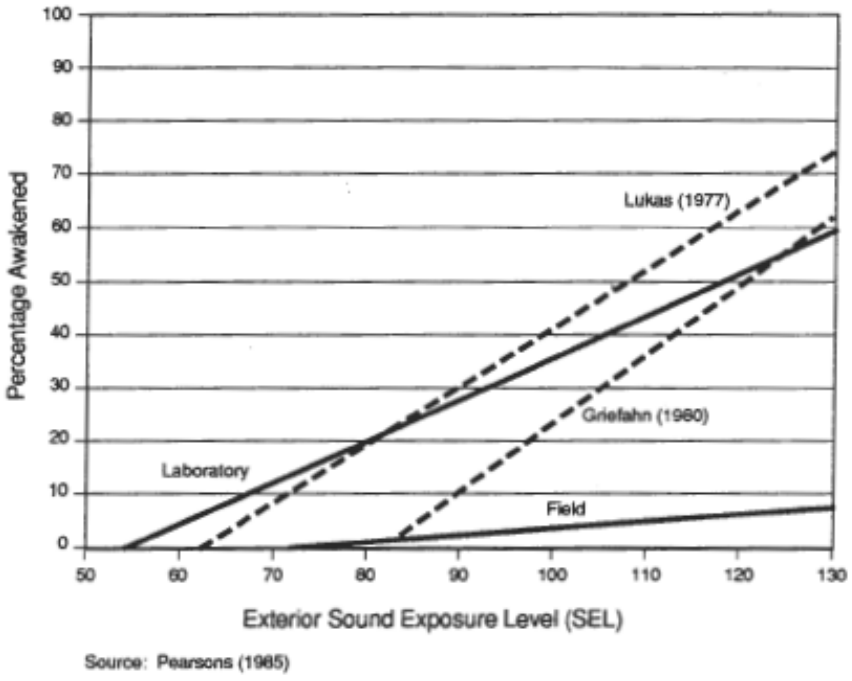
A review (Pearsons et al., 1989) of the literature related to sleep disturbance demonstrated that the relationship, based exclusively on laboratory studies, predicts greater sleep disturbance than that likely to occur in a real-life situation in which some adaptation has occurred. The prediction relationships developed in this review should not be considered to yield precise estimates of sleep disturbance because of the great variability in the data sets from which they were developed. The relationships include only the duration and level components of "noise exposure." Increasing the precision of prediction would depend on quantification of some of the nonacoustic factors. Furthermore, a recent review of field as well as laboratory studies suggests that habituation may reduce the effect of noise on sleep (Pearsons et al., 1989).

Noise must penetrate the home to disturb sleep. Interior noise levels are lower than exterior levels due to the attenuation of the sound energy by the structure. The amount of attenuation provided by the building is dependent on the type of construction and whether the windows are open or closed. The approximate national average attenuation factors are 15 dB for open windows and 25 dB for closed windows (U.S. Environmental Protection Agency, 1974).

Incorporating these attenuation factors, the percent awakened relationships previously discussed under summer conditions are presented in Figure J-3. In conclusion, the scientific literature does not provide a consensus on sleep disturbance. There is no recognized criteria or standard that provides guidance to assess sleep disturbance due to noise.

2.5 NOISE-INDUCED HEARING LOSS

Hearing loss is measured in decibels and refers to the permanent auditory threshold shift of an individual's hearing in an ear. Auditory threshold refers to the minimum acoustic signal that evokes an auditory sensation, i.e., the quietest sound a person can hear. When a threshold shift occurs a person's hearing is not as sensitive as before, and the minimum sound that a person can hear must be louder. The threshold shift that naturally occurs with age is called presbycusis. Exposure to high levels of sound can cause temporary and permanent threshold shifts usually referred to as noise-induced hearing loss. Permanent hearing loss is generally associated with destruction of the hair cells of the inner ear.



Sleep Disruption (Awakening)

Figure I-3

The U.S. EPA (1974) and the Committee on Hearing, Bioacoustics, and Biomechanics (National Academy of Sciences, 1981) have addressed the risk of outdoor hearing loss. They have concluded that hearing loss would not be expected for people living outside the DNL 75 dB noise contour. Several studies of populations near existing airports in the United States and the United Kingdom have shown that the possibility for permanent hearing loss in communities near intense commercial take-off and landing patterns is remote. An FAA-funded study compared the hearing of the population near the Los Angeles International Airport to that of the population in a quiet area away from aircraft noise (Parnel et al., 1972). A similar study was performed in the vicinity of London Heathrow Airport (Ward et al., 1972). Both studies concluded that there was no significant difference between the hearing loss of the two populations, and no correlation between the hearing level with the length of time people lived in the airport neighborhood.

2.6 NONAUDITORY HEALTH EFFECTS OF RESIDENTIAL AIRCRAFT NOISE

Based on summaries of previous research in the field (Thompson, 1981; Thompson and Fidell, 1989), predictions of nonauditory health effects of aircraft noise cannot be made. A valid predictive procedure requires: (1) evidence for causality between aircraft noise exposure and adverse nonauditory health consequences, and (2) knowledge of a quantitative relationship between amounts of noise exposure (dose) and specific health effects. Because results of studies of aircraft noise on health are equivocal, there is no sound scientific basis for making adequate risk assessments.

Alleged nonauditory health consequences of aircraft noise exposure that have been studied include birth defects, low birth weight, psychological illness, cancer, stroke, hypertension, sudden cardiac death, myocardial infarction, and cardiac arrhythmias. Of these, hypertension is the most biologically plausible effect of noise exposure. Noise appears to cause many of the same biochemical and physiological reactions, including temporary elevation of blood pressure, as do many other environmental stressors. These temporary increases in blood pressure are believed to lead to a gradual resetting of the body's blood pressure control system. Over a period of years, permanent hypertension may develop (Peterson et al., 1984).

Studies of residential aircraft noise have produced contradictory results. Early investigations indicated that hypertension was from two to four times higher in areas near airports than in areas located away from airports (Karagodina et al., 1969). Although Meecham and Shaw (1988) continue to report excessive cardiovascular mortality among individuals 75 years or older living near the Los Angeles International Airport, their findings cannot be replicated (Frerichs et al., 1980). In fact, noise exposure increased over the years while there was a decline in all cause, age-adjusted death rates and inconsistent changes in age-adjusted cardiovascular, hypertension, and cerebrovascular disease rates.

Studies that have controlled for multiple factors have shown no, or a very weak, association between noise exposure and nonauditory health effects. This observation holds for studies of occupational and traffic noise as well as for aircraft noise exposure. In contrast to the early reports of two- to six-fold increases in hypertension due to high industrial noise (Thompson and Fidell, 1989), the more rigorously controlled studies of Talbott et al. (1985) and van Dijk et al. (1987), show no association between hypertension and prolonged exposure to high levels of occupational noise.

In the aggregate, studies indicate that no association exists between street traffic noise and blood pressure or other cardiovascular changes. Two large prospective collaborative studies of heart disease are of particular interest. To date, cross-sectional data from these cohorts offer contradictory results. Data from one cohort show a slight increase in mean systolic blood pressure (2.4 millimeters of mercury) in the noisiest compared to the quietest area; while data from the second cohort show the lowest mean systolic

blood pressure and highest high-density lipoprotein cholesterol (lipoprotein protective of heart disease) for men in the noisiest area (Babisch and Gallacher, 1990). These effects of traffic noise on blood pressure and blood lipids were more pronounced in men who were also exposed to high levels of noise at work.

It is clear from the foregoing that the current state of technical knowledge cannot support inference of a causal or consistent relationship, nor a quantitative dose-response, between residential aircraft noise exposure and health consequences. Thus, no technical means are available for predicting extra-auditory health effects of noise exposure. This conclusion cannot be construed as evidence of no effect of residential aircraft noise exposure on nonauditory health. Current findings, taken in sum, indicate only that further rigorous studies are needed.

2.7 DOMESTIC ANIMALS AND WILDLIFE

A recent study was published on the effects of aircraft noise on domestic animals that provided a review of the literature and a review of 209 claims pertinent to aircraft noise over a period spanning 32 years (Bowles et al., 1990). Studies since the late 1950s were motivated both by public concerns about what was at that time a relatively novel technology, supersonic flight, and by claims leveled against the U.S. Air Force for damage done to farm animals by very low-level subsonic overflights. Since that time over 40 studies of aircraft noise and sonic booms, both in the United States and overseas, have addressed acute effects, including effects of startle responses (sheep, horses, cattle, fowl), and effects on reproduction and growth (sheep, cattle, fowl, swine), parental behaviors (fowl, mink), milk letdown (dairy cattle, dairy goats, swine), and egg production.

The literature on the effects of noise on domestic animals is not large, and most of the studies have focused on the relation between dosages of continuous noise and effects. Chronic noises are not a good model for aircraft noise, which lasts only a few seconds, but which is often very startling. The review of claims suggests that a major source of loss was panics induced in naive animals.

Aircraft noise may have effects because it might trigger a startle response, a sequence of physiological and behavioral events that once helped animals avoid predators. There are good dose-response relations describing the tendency to startle to various levels of noise, and the effect of habituation on the startle response.

The link between startles and serious effects (i.e., effects on productivity) is less certain. Here, we will define an effect as any change in a domestic animal that alters its economic value, including changes in body weight or weight gain, numbers of young produced, weight of young produced, fertility, milk production, general health, longevity, or tractability. At this point, changes in productivity are usually considered an adequate indirect measure of changes in well being, at least until objective legal guidelines are provided.

The focus on the effects on production runs counter to a trend in the literature toward measuring the relation between noise and physiological effects, such as changes in corticosteroid levels, and in measures of immune system function. As a result, it is difficult to determine the relation between dosages of noise and serious effects using only physiological measures. The experimental literature is inadequate to document long-term or subtle effects resulting from exposure to aircraft noise.

2.8 LAND USE COMPATIBILITY GUIDELINES

Widespread concern about the noise impacts of aircraft noise essentially began in the 1950s, a decade that saw the major introduction of high power jet aircraft into military service. The concern about noise impacts in the communities around airbases, and also within the airbases themselves, led the Air Force to conduct major investigations into the noise properties of jets, methods of noise control for test operations, and the effects of noise from aircraft operations in communities surrounding airbases. These studies established an operational framework of investigation and identified the basic parameters affecting community response to noise. These studies also resulted in the first detailed procedures for estimating community response to aircraft noise (Stevens and Pietrasanta, 1957).

Although most attention was given to establishing methods of estimating residential community response to noise (and establishing the conditions of noise "acceptability" for residential use), community development involves a variety of land uses with varying sensitivity to noise. Thus, land planning with respect to noise requires the establishment of noise criteria for different land uses. This need was met with the initial development of aircraft noise compatibility guidelines for varied land uses in the mid-1960s (Bishop, 1964).

In residential areas, noise intrusions generate feelings of annoyance on the part of individuals. Increasing degrees of annoyance lead to the increasing potential for complaints and community actions (e.g., threats of legal actions, drafting of noise ordinances). Annoyance is based largely upon noise interference with speech communication, listening to radio and television, and sleep. Annoyance in the home may also be based upon dislike of "outside" intrusions of noise even though no specific task is interrupted.

Residential land use guidelines have developed from consideration of two related factors:

(a) Accumulated case history experience of noise complaints and community actions near civil and military airports

(b) Relationships between environmental noise levels and degrees of annoyance (largely derived from social surveys in a number of communities).

In the establishment of land use guidelines for other land uses, the prime consideration is task interference. For many land uses, this translates into the degree of speech interference, after taking into consideration the importance of speech communication and the presence of non-aircraft noise sources related directly to the specific land use considered. For some noise-sensitive land uses where any detectable noise signals that rise above the ambient noise are unwanted (e.g., music halls), detectability may be the criterion rather than speech interference.

A final factor to be considered in all land uses involving indoor activities is the degree of noise insulation provided by the building structures. The land use guideline limits for unrestricted development within a specific land use assume noise insulation properties provided by typical commercial building construction. The detailed land use guidelines may also define a range of higher noise exposure where construction or development can be undertaken, provided a specified amount of noise insulation is included in the buildings. Special noise studies, undertaken by architectural or engineering specialists, may be needed to define the special noise insulation requirements for construction in these guideline ranges.

Estimates of total noise exposure resulting from aircraft operations, as expressed in DNL values, can be interpreted in terms of the probable effect on land uses. Suggested compatibility guidelines for evaluating land uses in aircraft noise exposure areas were originally developed by the FAA. Part 150 of the FAA regulations prescribes the procedures, standards, and methodology governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs. It prescribes the use of yearly DNL in the evaluation of airport noise environments. It also identifies those land use types that are normally compatible with various levels of noise exposure. Compatible or incompatible land use is determined by comparing the predicted or measured DNL level at a site with the values given in the table. The guidelines reflect the statistical variability of the responses of large groups of people to noise. Therefore, any particular level might not accurately assess an individual's perception of an actual noise environment.

While the FAA guidelines specifically apply to aircraft noise, it should be noted that DNL is also used to describe the noise environment due to other community noise sources, including motor vehicles and railroads. The use of DNL is endorsed by the scientific community to assess land use compatibility as it pertains to noise (American National Standards Institute, 1990). Hence, the land use guidelines presented by the FAA can also be used to assess the noise impact from community noise sources other than aircraft.

REFERENCES

American National Standards Institute, 1990. Sound Level Descriptors for Determination of Compatible Land Use, ANSI S12.40-1990.

Ames, D., 1974. Sound Stress and Meat Animals, Proceedings of the International Livestock Environment Symposium, Lincoln, Nebraska, pp. 324-330.

Ando, Y., Y. Nakane, and J. Egawa, 1975. "Effects of Aircraft Noise on the Mental Work of Pupils," Journal of Sound and Vibration, 43(4), pp. 683-691.

Anton-Guirgis, H., B. Culver, S. Wang, and T. Taylor, 1986. Exploratory Study of the Potential Effects of Exposure to Sonic Boom on Human Health, Vol. 2: Epidemiological Study, Report No. AAMRL-TR-86-020.

Arnoult, M.D., L.G. Gillfillan, and J.W. Voorhees, 1986. "Annoyingness of Aircraft Noise in Relation to Cognitive Activity," Perceptual and Motor Skills, 63, pp. 599-616.

Babisch, W., and J. Gallacher, 1990. Traffic Noise, Blood Pressure and Other Risk Factors - The Caerphilly and Speedwell Collaborative Heart Disease Studies. Noise '88: New Advances in Noise Research, pp. 315-326, Council for Building Research Stockholm, Sweden (Swedish).

Belanovskii, A., and V.A. Omel'yanenko, 1982. "Acoustic Stress in Commercial Poultry Production," Soviet Agricultural Science, 11, 60-62.

Bennett, R. and Pearsons, K.S., 1981. Handbook of Aircraft Noise Metrics, Report No. NASA CR-3406, National Aeronautics and Space Administration, Washington, DC.

Bishop, D.E., 1964. Development of Aircraft Noise Compatibility for Varied Land Uses, FAA SRDS Report RD-64-148, II.

Bowles, A.E., P.K. Yochem, and F.T. Awbrey 1990. The Effects of Aircraft Overflights and Sonic Booms on Domestic Animals, NSBIT Technical Operating Report No. 13, BBN Laboratories, Inc.

Crook, M.A., and F.J. Langdon, 1974. "The Effects of Aircraft Noise on Schools around London Airport," Journal of Sound and Vibration, 34(2), pp. 221-232.

Federal Aviation Administration, 1993. Integrated Noise Model Version 4.11 User's Guide Supplement, DOT/FAA/EE/92102.

Federal Highway Administration, 1978. Highway Traffic Noise Prediction Model, Report No. FHWA-RD-77-118.

Fidell, S., T.J. Schultz, and D.M. Green, 1988. A Theoretical Interpretation of the Prevalence Rate of Noise-Induced Annoyance in Residential Populations, Journal of the Acoustical Society of America, 84(6).

Fidell, S., D. Barber, and T. Schultz, 1989. Updating a dosage-effect relationship for the prevalence of annoyance due to general transportation noise, in Noise and Sonic Boom Impact Technology, Human Systems Division, Air Force Systems Command, Brooks Air Force Base, Texas (HSD-TR-89-009).

Frerichs, R.R., B.L. Beeman, and A.H. Coulson, 1980. Los Angeles Airport Noise and Mortality - Faulty Analysis and Public Policy, American Journal of Public Health, 70, pp. 357-362.

Goldstein, J., and J. Lukas, 1980. Noise and Sleep: Information Needs for Noise Control, Proceedings of the Third International Congress on Noise as a Public Health Problem, ASHA Report No. 10, pp 442-448.

Griefahn, B., 1980. Research on noise disturbed sleep since 1973. Proceedings of the Third International Congress on Noise as a Public Health Problem, ASHA Report No. 10, pp. 377-390.

Griefahn, B., and A. Muzet, 1978. "Noise Induced Sleep Disturbance and Their Effects on Health," Journal of Sound Vibration, 59 (1), pp. 99-106.

Hall, F., S. Taylor, and S. Birnie, 1985. "Activity Interference and Noise Annoyance," Journal of Sound and Vibration, 103(2).

Karagodina, I.L., S.A. Soldatkina, I.L. Vinokur, and A.A. Klimukhin, 1969. "Effect of Aircraft Noise on the Population Near Airports," Hygiene and Sanitation, 34, pp. 182-187.

Klatt, M., K. Stevens, and C. Williams, 1969. "Judgments of the Acceptability of Aircraft Noise in the Presence of Speech," Journal of Sound and Vibration, 9(2), pp. 263-275.

Kryter, K.D., and C.E. Williams, 1966. "Masking of Speech by Aircraft Noise," Journal of the Acoustical Society of America, 39, pp. 138-150.

Kull, R.C., and A.D. Fisher, 1986. Supersonic and Subsonic Aircraft Noise Effects on Animals: A Literature Survey (AAMRL-TR-87-032), Noise and Sonic Boom Impact Technology ADPO, Human Systems Division, Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.

Lukas, J., 1975. Noise and Sleep: A Literature Review and a Proposed Criterion for Assessing Effect, Journal of the Acoustical Society of America, 58(6).

Lukas, J., 1977. Measures of noise level: Their relative accuracy in predicting objective and subjective responses to noise during sleep. EPA Report No. 600/1-77-010. U.S. Environmental Protection Agency, Washington DC.

Meecham, W.C., and N.A. Shaw, 1988. Increase in Disease Mortality Rates Due to Aircraft Noise. Proceedings of the International Congress of Noise as a Public Health Problem, Swedish Council for Building Research, Stockholm, Sweden, 21-25 August.

Miller, J.D., 1974. Effects of Noise on People. Journal of the Acoustical Society of America, 56(3), pp. 729-764.

Mills, J.H., 1975. "Noise and Children: A Review of Literature," Journal of the Acoustical Society of America, 58(4), pp. 767-779.

Moulton, Carey L., 1990. Air Force Procedure for Predicting Aircraft Noise Around Airbases: Noise Exposure Model (NOISEMAP) User's Manual, Report AAMRL-TR-90-011, Human Systems Division/Air Force Systems Command, Wright-Patterson Air Force Base, Ohio, February.

National Academy of Sciences, 1977. Guidelines for Preparing Environmental Impact Statements on Noise, Report of Working Group on the Committee on Hearing, Bioacoustics, and Biomechanics, National Research Council, Washington, DC.

National Academy of Sciences, 1981. The Effects on Human Health from Long-Term Exposure to Noise, Report of Working Group 81, Committee on Hearing, Bioacoustics and Biomechanics, The National Research Council, Washington, DC.

Parnel, Nagel, and Cohen, 1972. Evaluation of Hearing Levels of Residents Living Near a Major Airport, Report FAA-RD-72-72.

Pearsons, K., D. Barber, and B. Tabachnick, 1989. Analyses of the Predictability of Noise-Induced Sleep Disturbance, Report No. HSD-TR-89-029, CA BBN Systems and Technologies Corporation, Canoga Park, California.

Pearsons, K.S., and R. Bennett, 1974. Handbook of Noise Ratings, Report No. NASA CR-2376, National Aeronautics and Space Administration, Washington, DC.

Peterson, E.A., J.S. Augenstein, and C.L. Hazelton, 1984. "Some Cardiovascular Effects of Noise," Journal of Auditory Research, 24, 35-62.

Schultz, T.J., 1978. "Synthesis of Social Surveys on Noise Annoyance," Journal of the Acoustical Society of America, 64(2), pp. 377-405.

Stevens, K.N., and A.C. Pietrasanta, 1957. Procedures for Estimating Noise Exposure and Resulting Community Reactions from Air Base Operations, WADC TN-57-10, Wright Air Development Center, Wright-Patterson Air Force Base, Ohio.

Talbott, E., J. Helmkamp, K. Matthews, L. Kuller, E. Cottington, and G. Redmond, 1985. Occupational Noise Exposure, Noise-Induced Hearing Loss, and the Epidemiology of High Blood Pressure, American Journal of Epidemiology, 121, pp. 501-515.

Thompson, S.J., 1981. Epidemiology Feasibility Study: Effects of Noise on the Cardiovascular System, Report No. EPA 550/9-81-103.

Thompson, S., and S. Fidell, 1989. Feasibility of Epidemiologic Research on Nonauditory Health Effects of Residential Aircraft Noise Exposure, BBN Report No. 6738, BBN Systems and Technologies, Canoga Park, California.

U.S. Department of Transportation, 1980. Guidelines for Considering Noise in Land Use Planning and Control, Federal Interagency Committee on Urban Noise, June.

U.S. Environmental Protection Agency, 1973. Public Health and Welfare Criteria for Noise, Report No. NCD 73.1, Washington, DC, July.

U.S. Environmental Protection Agency, 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, Publication No. 550/9-74-004, Washington, DC, March.

U.S. EPA. See U.S. Environmental Protection Agency.

van Dijk, F.J.H., A.M. Souman, and F.F. de Fries, 1987. Nonauditory Effects of Noise in Industry, Vol. I: A Final Field Study in Industry, International Archives of Occupational and Environmental Health, 59, pp. 133-145.

Ward, Cushing, and Burns, 1972. "TTS from Neighborhood Aircraft Noise," Journal of the Acoustical Society of America, 55(1).

Williams, C.E., K.S. Pearsons, and M.H.L. Hecker, 1971. "Speech Intelligibility in the Presence of Time-Varying Aircraft Noise," Journal of the Acoustical Society of America, 56(3).

APPENDIX J

BIOLOGICAL OPINION

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
08EVEN00-2012-F-0364

February 19, 2013

John O'Gara
Head, Environmental Management Division
Naval Air Weapons Station
1 Administration Circle
China Lake, California 93555-6100

Subject: Biological Opinion for the Renewal of the Naval Air Weapons Station, China Lake Public lands Withdrawal, California (5090 Ser PR241/397) (8-8-12-F-29)

Dear Mr. O'Gara:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the proposed land withdrawal renewal and its effects on the federally threatened desert tortoise (*Gopherus agassizii*) and its critical habitat, in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). We received your May 24, 2012 request for formal consultation on May 30, 2012.

This biological opinion is based on information which accompanied your request for consultation, including the biological assessment (Navy 2012), annual reports from the Navy on previous biological opinions (Navy 1996-2011), and conversations and correspondence with Navy staff. A complete record of this consultation can be made available at the Ventura Fish and Wildlife Office.

Consultation History

On June 25 and 26, 2012, we met with the Navy to discuss details addressed in its biological assessment. Subsequent communication between the Service and the Navy via electronic mail and phone conversations further refined the Navy's project description and analyses. Our analysis in this biological opinion reflects changes made to the Navy's biological assessment after consultation was initiated.

Three federally listed species occur within the action area: the endangered Mohave tui chub (*Siphateles bicolor mohavensis*), the threatened Inyo California towhee (*Pipilo crissalis eremophilus*), and the desert tortoise. Critical habitats for the desert tortoise and Inyo California towhee occur within the action area of this biological opinion. The Navy determined that the proposed action is not likely to adversely affect the Mohave tui chub or the Inyo California towhee and its critical habitat. These species and critical habitat of the Inyo California towhee

occur in small areas of the installation that the Navy generally does not use for ground-disturbing activities. The Navy may infrequently conduct specific activities in these areas; on such occasions, it will consult with the Service on these proposed actions. We acknowledge that wildfire caused by the Navy's activities is a potential threat although test and target sites are located far from their habitats. Because such wildfires are not planned or legal activities, we will not consider them in this biological opinion. (By wildfire in this context, we are referring to fires that are not predictable (e.g., a large fire caused by the crash of aircraft during a wind storm. We will consider the effects of the more routine and smaller fires that may occur during the use of target and test sites.) In the event that the Navy needs to respond to a wildfire that may affect these species, it would request emergency consultation, pursuant to the implementing regulations for section 7(a)(2) of the Act 9 (50 Code of Federal Regulations 402.05). Therefore, we concur with the Navy's determination that the proposed action is not likely to adversely affect the Mohave tui chub, Inyo California towhee, or critical habitat of the Inyo California towhee.

In the Navy's initial May 24, 2012, request for consultation, it requested our concurrence on its determination that the proposed action would have no effect on the endangered southwestern willow flycatcher (*Empidonax traillii extimus*) and least Bell's vireo (*Vireo bellii pusillus*). In subsequent correspondence, the Navy altered this determination, concluding that its proposed action is not likely to adversely affect either species. Although willow flycatchers and Bell's vireos are common migrants in riparian habitat in the northern portion of the installation, sufficient information is not available to determine whether these migrants are the endangered subspecies. Regardless of the taxonomic status of these migrants, the Navy does not conduct activities in these riparian areas. Wildfire caused by the Navy's activities may affect these riparian areas; if a fire did occur, the same factors would apply that we described in the previous paragraph. For these reasons, we concur with the Navy's determination that the proposed action is not likely to adversely affect either southwestern willow flycatcher or least Bell's vireo.

We provided a draft biological opinion to the Navy on December 10, 2012 (Service 2012b). The Navy provided comments on the draft biological opinion via electronic mail (Campbell 2013); we have incorporated the comments, as appropriate.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed action includes: 1) Congressional renewal of the land withdrawal (25-year renewal), 2) an increase of up to 25 percent in operational tempo within current land use areas approved for designated uses, 3) an expansion of unmanned aerial and surface systems, and 4) an expansion of existing and an introduction of evolving directed energy weapons development. Land use and nonmilitary activities on the Naval Air Weapons Station would continue according to current patterns of use; that is, the proposed increases in operational tempo would be accommodated in existing, approved use areas. Natural and cultural resources would continue to

be conserved with the implementation of the management process defined in the installation's Comprehensive Land Use Management Plan. Numerous customers use the Naval Air Weapons Station to conduct a wide range of activities; Navy environmental staff at the Naval Air Weapons Station work with these customers to ensure they are aware of the natural resources that are present on the installation.

The Navy's biological assessment described its proposed activities in technical terms. For this biological opinion, we worked with the Navy to assess the threats to desert tortoises and their critical habitat associated with each proposed activity. The following table lists the Navy's activities and notes the general manner by which the activity would affect the desert tortoise and its critical habitat (e.g., ground disturbance, use of roads, etc.). We will then consider more specifically the nature of these effects on the desert tortoise and its critical habitat and the measures that the Navy has proposed to avoid, reduce, or minimize these effects. The Navy's biological assessment contains a more detailed description of its activities.

The Navy will also undertake numerous actions in the course of managing natural resources on the Naval Air Weapons Station. These measures include but are not limited to:

1. Continuing the control of invasive species to reduce degradation of plant and wildlife habitats and to reduce the frequency of wildfires on the Naval Air Weapons Station.

2. Continuing to control of wild horses and feral burros on the Naval Air Weapons Station to better protect natural resources.

3. Undertaking plant and animal species surveys of the target and test site buffers, to support Navy activities that may affect desert tortoises.

4. Conducting post-project monitoring of certain activities that have the potential to affect federally listed species. The purpose of this monitoring is to ensure that avoidance and minimization measures have been properly implemented, to assess the effectiveness of these measures, and to allow for modifications to minimization measures, as needed.

Table 1 - Threats and Associated Activities of Proposed Actioin

		Driving off-road	Driving on road	Ground Disturbance	Explosions (potential for fire)	Weeds	Ravens	Moving desert tortoise from harm	Trained Personnel on foot	Habitat Conversion
Range Flight Operations	Desert tortoise	N	Y	Y	Y	N	N	N	N	N
	Critical Habitat	N	Y	Y	Y	N	N	N	N	N
Airfield Flight Operations	Desert tortoise	N	N	N	N	N	N	N	N	N
	Critical Habitat	N/A								
Range Ground Operations	Desert tortoise	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Critical Habitat	N	Y	Y	Y	Y	Y	Y	Y	Y
Directed Energy Operations	Desert tortoise	N	Y	N	Y	N	N	Y	Y	N
	Critical Habitat	N/A								
Ordnance Expenditures	Desert tortoise	Y	Y	Y	y	N	N	Y	Y	N
	Critical Habitat	Y	Y	Y	Y	N	N	Y	Y	N
Energetic Material Expenditures	Desert tortoise	Y	Y	Y	y	N	N	Y	Y	N
	Critical Habitat	Y	Y	Y	Y	N	N	Y	Y	N
Native American Uses	Desert tortoise	N	Y	N	N	N	N	N	N	N
	Critical Habitat	N/A								
Geothermal	Desert tortoise	N	Y	N	N	Y	Y	Y	Y	N
	Critical Habitat	N/A								
Research and Education	Desert tortoise	N	Y	N	N	N	N	Y	Y	N
	Critical Habitat	N/A								
Recreation	Desert tortoise	Y	Y	N	N	N	N	Y	Y	N
	Critical Habitat	N/A								
Feral Grazing Management	Desert tortoise	N	Y	Y	N	Y	N	Y	Y	N
	Critical Habitat	N	Y	Y	N	Y	N	Y	Y	N
Fire Management	Desert tortoise	N	Y	Y	N	N	N	Y	Y	N
	Critical Habitat	N	Y	Y	N	N	N	Y	Y	Y
Future Development	Desert tortoise	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Critical Habitat	Y	Y	Y	Y	Y	Y	Y	Y	Y

Y = Associated activity may affect the desert tortoise or its critical habitat in this manner. (Activities would affect critical habitat and habitat not designated as critical in the same basic manner; however, we do not consider effects to non-critical habitat in assessing whether a proposed action is likely to destroy or adversely modify critical habitat.)

N = Associated activity does not affect the desert tortoise or its critical habitat.

N/A = Associated activity does not occur in area of concern (desert tortoise habitat or critical habitat)

Protective Measures

The Navy will continue to implement procedures designed to minimize impacts to desert tortoises. These procedures will ensure that potential impacts are minimized as much as possible, by being assessed during the project planning and approval process, and monitored for compliance and effectiveness. The Service and Navy revised the following measures from those included in the biological assessment during formal consultation:

1. The Navy will minimize incidental injury and mortality of desert tortoises by employing the following measures. Actual measures will be based on the results of site-specific field surveys and will be implemented, as needed, at the discretion of the Navy's environmental personnel (hereafter 'environmental staff'), including:

   a. Clearly delineating the boundaries of new construction or new target and test sites on the ground by flagging, survey lath, or wooden stakes;

b. Placing signs, as needed, to indicate the need to reduce speeds on roadways and that activities are to be strictly confined to the project site;

c. Biological monitoring of operations involved with the active removal of desert tortoise habitat known to be near the project site. Activities within existing test and target operations (operations including area preparation, target set-up, the actual test event and the target removal and site clean-up) would not require biological monitoring. The purpose of the biological monitoring is to ensure that avoidance and minimization measures have been properly implemented, to assess the effectiveness of these measures and to allow for modifications to minimization measures, as needed.

d. Placing desert tortoise-proof fences around projects or portions of projects in desert tortoise habitat where, the probability of injuring or killing a desert tortoise, without such fencing in place, is considered to be reasonably foreseeable.

2. Desert tortoise burrows located within 100 feet of the limits of construction or establishment of new target or test site boundaries will be protected by conducting additional on-site project personnel briefings (tailgate). If necessary, the Navy will either (1) place temporary (short-term) desert tortoise-proof fencing to completely enclose the burrow at a minimum distance of 20 feet from the burrow or, (2) for longer duration construction projects, fence the limits of construction to avoid any potential impacts to desert tortoise.

3. Desert tortoise burrows that cannot be avoided will be excavated by hand either by or under the direct supervision of an authorized biologist. Burrow excavation and subsequent handling of any desert tortoises will follow the most up-to-date guidelines that are acceptable to the Service.

4. The Navy will submit the credentials of personnel to be designated as authorized biologists to the Service at least 30 days prior to the onset of the activities to be monitored. The general qualifications and the request form are located on the Ventura Fish and Wildlife Office's website at http://www.fws.gov/ventura/species_information/protocols_guidelines/index.html.

5. All trash and debris will be promptly contained within containers that common ravens (*Corvus corax*) cannot access. These containers will be regularly removed from project sites to reduce the attractiveness of the area to common ravens and other desert tortoise predators.

6. Environmental staff will conduct awareness briefings for all personnel working in desert tortoise habitat. These briefings will be conducted either in person or via a video presentation of the briefing. At a minimum, the briefings will include discussions of:

a. the general provisions of the Endangered Species Act;

b. the necessity for adhering to the provisions of the Act, including both civil and criminal penalties for noncompliance. The penalties for these violations can be a maximum fine of up to $50,000 or imprisonment for one year, or both, and civil penalties of up to $25,000 per violation, may be assessed;

c. the potential for penalties associated with violating the provisions of the Act;

d. the specific requirements for complying with the provisions of the Act as they relate to each project;

e. the exact boundaries of the site within which the project activities may be accomplished;

f. the procedures to be accomplished by project personnel should any problem arise with respect to complying with environmental constraints;

g. general behavior and ecology of the desert tortoise; its sensitivity to human activities;

h. all personnel will be advised of the potential for desert tortoises to take refuge under vehicles and of the proper procedures to follow in that event; and

i. specific procedures to be followed to move a desert tortoise that may be in imminent danger (on a heavily traveled road, on an active project site, or under a vehicle).

7. To avoid impacts to desert tortoises during testing operations (including area preparation, target set up, the actual test event, and target removal or site clean-up) at test and target sites, Range personnel will make one final visual sweep of the target or test impact area to verify that desert tortoises are not present. Range personnel will remove any desert tortoises from eminent danger in accordance with procedures outlined in the Naval Air Weapons Station's awareness training. Range personnel will notify Environmental staff within 24 hours of removing any desert tortoise. The details of removals will be included in the annual reports submitted to the Service. Range personnel are not required to be Service authorized biologists to perform duties associated with this measure.

8. All personnel will check beneath their vehicles while in desert tortoise habitat prior to moving the vehicle. If a desert tortoise is found beneath the vehicle, it will be moved by environmental staff or by project personnel in accordance with guidelines provided to them during the awareness briefings. All personnel will be advised of the potential for desert tortoises to take refuge under vehicles and of the proper procedures to follow in that event. The Navy will report any removals of desert tortoises to the Service in its annual report.

9. The Navy will use adaptive fire management measures as a framework that recognizes biological uncertainty, while accepting a mandate to proceed on the basis of the best available scientific knowledge. As part of its fire management measures, the Navy will

continue to maintain its existing mutual aid fire-fighting agreements with other agencies (Bureau of Land Management, Forest Service, and County of San Bernardino) and continue to pursue the establishment of new mutual aid agreements. The Navy's goal is to contain all fires, while maintaining operational requirements, and safety and security of range personnel. To reduce the potential for impacts to threatened and endangered species, the Navy will employ the following measures:

a. Constructing firefighting equipment access roads (which may provide some utility as a fire break), on an as needed basis, in support of fire containment capabilities around targets. The Navy will use targets and the existing road network to determine where an access road may be prudent to prevent a fire from spreading into a roadless area. The utility of constructing access roads will be discussed with the Naval Air Weapons Station's Fire Department to determine where they would be useful to reduce the risk of fire and/or aid in fire suppression. The Navy will evaluate the benefits of constructing and maintaining access roads relative to both the economic and environmental cost. Access roads would be approximately 12 feet in width. The Navy will attempt to use areas naturally devoid of vegetation, including natural barriers such as washes and lava flows or existing roadways to minimize maintenance costs and impacts to native species.

b. Removing excessive vegetation (vegetation at a density that would sustain a fire) growth within the test and target areas, on an as needed basis to minimize the potential for a large, catastrophic wildfire as a result of range operations. Environmental staff will monitor the annual vegetation growth and work in conjunction with the Range and Fire Departments to determine when and where vegetation management is warranted.

c. The Navy will conduct post-fire surveys when fires leave the target area and enter adjoining critical habitat and document the date, time, location, cause, and acreage of the fire. Fires will be mapped using a global positioning system and plotted on a geographical information system.

d. In desert tortoise habitat, post-fire surveys will include focused surveys to determine if any desert tortoises have been injured or killed. The Navy will conduct the surveys in accordance with the desert tortoise pre-project survey guidelines (http://www.fws.gov/ventura/species_information/protocols_guidelines/index.html) and include the results in its annual report to the Service. An authorized biologist will lead the surveys.

e. The Navy will limit post-fire surveys to an annual cumulative acreage of 2,000 acres (1,000 acres in desert tortoise critical habitat and 1,000 acres in outside of desert tortoise critical habitat). The 2,000-acre limit is due to the practicality and logistical feasibility of conducting timely surveys over an area larger than 1,000 acres in both areas. In the instance of an unforeseen fire that exceeds this acreage, the Navy will consult with the Service as soon as possible.

10. The primary means to eliminate or minimize impacts to desert tortoises or their habitat will continue to be through the use of avoidance and minimization procedures. These methods include the following:

    a. To the extent possible, project sites will be selected so that they are located in previously disturbed areas.

    b. Surveys for desert tortoises will be accomplished for any project that occurs in potential habitat. Surveys will be conducted to support the analysis conducted under the National Environmental Policy Act, for new surface disturbing projects not analyzed in the record of decision for the legislative environmental impact statement for the land withdrawal, and where new disturbance may occur in desert tortoise habitat. Biologists will conduct surveys in accordance with the most current Service survey guidelines, except, surveys may be conducted year-round due to the short timelines associated with the Navy's activities.

    c. If new projects are located in desert tortoise habitat, environmental staff will, in conjunction with project proponents, attempt to reduce impacts by assessing the feasibility of adjusting a project's size, footprint, orientation, and construction method;

    d. If new projects have to be located where desert tortoises are known to occupy the project site, desert tortoises will be relocated by Service-authorized biologists prior to start of any activities. Authorized biologists are responsible for adhering to Service protocols and guidelines for handling and relocating desert tortoises.

    e. New land-disturbing activities that have occurred within habitats that support desert tortoises will continue to be documented in annual reports submitted to the Service.

11. The Navy will maintain coordination with Service and fulfill annual reporting requirement.

Future Development

Over the next 25 years, the Navy anticipates that 1,400 acres may be needed for new facilities, infrastructure, or new or expanded targets. In its biological assessment, the Navy estimates that 150 acres of new disturbance may occur within critical habitat and 1,250 acres may occur outside of critical habitat. The Navy estimates that the operation of the Naval Air Weapons Station could result in the mortality of up to four desert tortoises per year. The Navy also estimated the number of desert tortoises that may be harassed per year when animals are moved from harm's way. As we will discuss later in this biological opinion, we do not expect that moving desert tortoises from harm's way rises to the level where harassment, as defined in the Service's regulations (50 Code of Federal Regulations 17.3), occurs; consequently, we will not use the Navy's estimate in our analysis of the effects of the proposed action.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY AND ADVERSE MODIFICATION DETERMINATIONS

Jeopardy Determination

Section 7(a)(2) of the Endangered Species Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 Code of Federal Regulations 402.02).

The jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which describes the range-wide condition of the desert tortoise, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the desert tortoise in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the desert tortoise; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the desert tortoise; and (4) the Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on the desert tortoise.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed federal action in the context of the current status of the desert tortoise, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the desert tortoise in the wild.

Adverse Modification Determination

Section 7(a)(2) of the Endangered Species Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 Code of Federal Regulations 402.02. Instead, we have relied on the statutory provisions of the Act to complete the following analysis with respect to critical habitat.

In accordance with policy and regulation, the adverse modification analysis in this biological opinion relies on four components: (1) the Status of Critical Habitat, which describes the range-wide condition of designated critical habitat for the desert tortoise in terms of primary constituent elements, the factors responsible for that condition, and the intended recovery function of the critical habitat overall; (2) the Environmental Baseline, which analyzes the condition of the

critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated and interdependent activities on the primary constituent elements, and how that will influence the recovery role of the affected critical habitat units; and (4) Cumulative Effects, which evaluates the effects of future non-Federal activities in the action area on the primary constituent elements and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determination, the effects of the proposed federal action on the critical habitat of the desert tortoise are evaluated in the context of the range-wide condition of the critical habitat, taking into account any cumulative effects, to determine if the critical habitat range-wide would remain functional (or would retain the current ability for the primary constituent elements to be functionally established in areas of currently unsuitable but capable habitat) to serve its intended recovery role for the desert tortoise.

STATUS OF THE SPECIES AND CRITICAL HABITAT

Status of the Desert Tortoise

Section 4(c)(2) of the Act requires the Service to conduct a status review of each listed species at least once every 5 years. The purpose of a 5-year review is to evaluate whether or not the *species' status has changed since it was listed (or since the most recent 5-year review); these* reviews, at the time of their completion, provide the most up-to-date information on the range-wide status of the species. For this reason, we are appending the 5-year review of the status of the desert tortoise (Appendix 1; Service 2010a) to this biological opinion and are incorporating it by reference to provide most of the information needed for this section of the biological opinion. The following paragraphs provide a summary of the relevant information in the 5-year review.

In the 5-year review, the Service discusses the status of the desert tortoise as a single distinct population segment and provides information on the Federal Register notices that resulted in its listing and the designation of critical habitat. The Service also describes the desert tortoise's ecology, life history, spatial distribution, abundance, habitats, and the threats that led to its listing (i.e., the 5-factor analysis required by section 4(a)(1) of the Endangered Species Act). In the 5-year review, the Service concluded by recommending that the status of the desert tortoise as a threatened species be maintained.

With regard to the status of the desert tortoise as a distinct population segment, the Service concluded in the 5-year review that the recovery units recognized in the original and revised recovery plans (Service 1994 and 2011a, respectively) do not qualify as distinct population segments under the Service's distinct population segment policy (61 Federal Register 4722; February 7, 1996). We reached this conclusion because individuals of the listed taxon occupy habitat that is relatively continuously distributed, exhibit genetic differentiation that is consistent

with isolation-by-distance in a continuous-distribution model of gene flow, and likely vary in behavioral and physiological characteristics across the area they occupy as a result of the transitional nature of, or environmental gradations between, the described subdivisions of the Mojave and Colorado deserts.

In the 5-year review, the Service summarizes information with regard to the desert tortoise's ecology and life history. Of key importance to assessing threats to the species and to developing and implementing a strategy for recovery is that desert tortoises are long-lived, require up to 20 years to reach sexual maturity, and have low reproductive rates during a long period of reproductive potential. The number of eggs that a female desert tortoise can produce in a season is dependent on a variety of factors including environment, habitat, availability of forage and drinking water, and physiological condition. Predation seems to play an important role in clutch failure. Predation and environmental factors also affect the survival of hatchlings.

In the 5-year review, the Service also discusses various means by which researchers have attempted to determine the abundance of desert tortoises and the strengths and weaknesses of those methods. The Service provides a summary table of the results of range-wide monitoring, initiated in 2001, in the 5-year review. This ongoing sampling effort is the first comprehensive attempt to determine the densities of desert tortoises across their range. Table 1 of the 5-year review provides a summary of data collected from 2001 through 2007; we summarize data from the 2008 through 2010 sampling efforts in subsequent reports (Service 2009, 2010c, 2010d). As the Service notes in the 5-year review notes, much of the difference in densities between years is due to variability in sampling; determining actual changes in densities will require many years of monitoring. Additionally, due to differences in area covered and especially to the non-representative nature of earlier sample sites, data gathered by the range-wide monitoring program cannot be reliably compared to information gathered through other means at this time.

In the 5-year review, the Service provides a brief summary of habitat use by desert tortoises; more detailed information is available in the revised recovery plan (Service 2011a). In the absence of specific and recent information on the location of habitable areas of the Mojave Desert, especially at the outer edges of this area, the 5-year review also describes and relies heavily on a quantitative, spatial habitat model for the desert tortoise north and west of the Colorado River that incorporates environmental variables such as precipitation, geology, vegetation, and slope and is based on occurrence data of desert tortoises from sources spanning more than 80 years, including data from the 2001 to 2005 range-wide monitoring surveys (Nussear et al. 2009). The model predicts the probability that desert tortoises will be present in any given location; calculations of the amount of desert tortoise habitat in the 5-year review and in this biological opinion use a threshold of 0.5 or greater predicted value for potential desert tortoise habitat. The model does not account for anthropogenic effects to habitat and represents the potential for occupancy by desert tortoises absent these effects.

To begin integrating anthropogenic activities and the variable risk levels they bring to different parts of the Mojave and Colorado deserts, the Service completed an extensive review of the threats known to affect desert tortoises at the time of their listing and updated that information with more current findings in the 5-year review. The review follows the format of the five-factor analysis required by section 4(a)(1) of the Act. The Service described these threats as part of the process of its listing (55 Federal Register12178; April 2, 1990), further discussed them in the original recovery plan (Service 1994), and reviewed them again in the revised recovery plan (Service 2011a).

To understand better the relationship of threats to populations of desert tortoises and the most effective manner to implement recovery actions, the Desert Tortoise Recovery Office is developing a spatial decision support system that models the interrelationships of threats to desert tortoises and how those threats affect population change. The spatial decision support system describes the numerous threats that desert tortoises face, explains how these threats interact to affect individual animals and habitat, and how these effects in turn bring about changes in populations. For example, we have long known that the construction of a transmission line can result in the death of desert tortoises and loss of habitat. We have also known that common ravens, known predators of desert tortoises, use the transmission line's pylons for nesting, roosting, and perching and that the access routes associated with transmission lines provide a vector for the introduction and spread of invasive weeds and facilitate increased human access into an area. Increased human access can accelerate illegal collection and release of desert tortoises and their deliberate maiming and killing, as well as facilitate the spread of other threats associated with human presence, such as vehicle use, garbage and dumping, and invasive plants (Service 2011a). Changes in the abundance of native plants because of invasive weeds can compromise the physiological health of desert tortoises, making them more vulnerable to drought, disease, and predation. The spatial decision support system allows us to map threats across the range of the desert tortoise and model the intensity of stresses that these multiple and combined threats place on desert tortoise populations.

The threats described in the listing rule and both recovery plans continue to affect the species. Indirect impacts to desert tortoise populations and habitat occur in accessible areas that interface with human activity. Most threats to the desert tortoise or its habitat are associated with human land uses; research since 1994 has clarified many mechanisms by which these threats act on desert tortoises. As stated earlier, increases in human access can accelerate illegal collection and release of desert tortoises and deliberate maiming and killing, as well as facilitate the spread of other threats associated with human presence, such as vehicle use, garbage and dumping, and invasive weeds.

Some of the most apparent threats to the desert tortoise are those that result in mortality and permanent habitat loss across large areas, such as urbanization and large-scale renewable energy projects, and those that fragment and degrade habitats, such as proliferation of roads and highways, OHV activity, and habitat invasion by non-native invasive plant species. However,

we remain unable to quantify how threats affect desert tortoise populations. The assessment of the original recovery plan emphasized the need for a better understanding of the implications of multiple, simultaneous threats facing desert tortoise populations and of the relative contribution of multiple threats on demographic factors (i.e., birth rate, survivorship, fecundity, and death rate; Tracy et al. 2004).

We have enclosed a map that depicts the 12 critical habitat units of the desert tortoise and the aggregate stress that multiple, synergistic threats place on desert tortoise populations (Appendix 2). The map also depicts linkages between conservation areas for the desert tortoise (which include designated critical habitat) recommended in the revised recovery plan (Service 2011a) that are based on an analysis of least-cost pathways (i.e., areas with the highest potential to support desert tortoises) between conservation areas for the desert tortoise. This map illustrates that areas under the highest level of conservation management for desert tortoises remain subjected to numerous threats and stresses. This indicates that current conservation actions for the desert tortoise are not substantially reducing mortality sources for the desert tortoise across its range.

Since the completion of the 5-year review, the Service has issued several biological opinions that affect large areas of desert tortoise habitat because of numerous proposals to develop renewable energy within its range. These biological opinions concluded that proposed solar plants were not likely to jeopardize the continued existence of the desert tortoise primarily because they were located outside of critical habitat and desert wildlife management areas that contain most of the land base required for the recovery of the species. The proposed actions also included numerous measures intended to protect desert tortoises during the construction of the projects, such as translocation of affected individuals. Additionally, the Bureau and California Energy Commission, the agencies permitting these facilities, have required the project proponents to fund numerous measures, such as land acquisition and the implementation of recovery actions intended to offset the adverse effects of the proposed actions. In aggregate, these projects resulted in an overall loss of approximately 30,180 acres of habitat of the desert tortoise; three of the projects (BrightSource Ivanpah, Stateline Nevada, and Desert Sunlight) constricted linkages between conservation areas that are important for the recovery of the desert tortoise. We also predicted that these projects would translocate, injure, or kill up to 1,621 desert tortoises (see table below); we concluded that most of the individuals in these totals would be juveniles. The mitigation required by the Bureau and California Energy Commission will result in the acquisition of private land within critical habitat and desert wildlife management areas and funding for the implementation of various actions that are intended to promote the recovery of the desert tortoise; at this time, we cannot assess how successful these measures will be.

The following table summarizes information regarding the proposed solar projects that have undergone formal consultation with regard to the desert tortoise. Data are from Service (2010d [Chevron Lucerne Valley], e [Calico], f [Genesis], g [Blythe]; 2011b [BrightSource Ivanpah], c [Desert Sunlight], d [Abengoa Harper Lake], e [Palen]; and Burroughs (2012; Nevada projects). Projects are in California, unless noted.

Project	Acres of Desert Tortoise Habitat	Estimated Number of Desert Tortoises Onsite	Recovery Unit
BrightSource Ivanpah	3,582	1,136	Eastern Mojave
Stateline Nevada - NV	2,966	123	Eastern Mojave
Amargosa Farm Road - NV	4,350	4	Eastern Mojave
Calico*			Western Mojave
Abengoa Harper Lake	Primarily in abandoned agricultural fields	4	Western Mojave
Chevron Lucerne Valley	516	10	Western Mojave
Nevada Solar One - NV	400	**	Northeastern Mojave
Copper Mountain North - NV	1,400	30 **	Northeastern Mojave
Copper Mountain - NV	380	**	Northeastern Mojave
Moapa K Road Solar - NV	2,152	202	Northeastern Mojave
Genesis	1,774	8	Colorado
Blythe	6,958	30	Colorado
Palen	1,698	18	Colorado
Desert Sunlight	4,004	56	Colorado
Total	30,180	1,621	

* The applicant has proposed changes to the proposed action; the Bureau has re-initiated formal consultation with the Service, pursuant to section 7(a)(2) of the Endangered Species Act, as part of its re-evaluation of the project (Service 2012c)

** These projects occurred under the Clark County Multi-species habitat conservation plan; we estimate that all three projects combined will affect fewer than 30 desert tortoises.

In addition to the biological opinions issued for solar development within the range of the desert tortoise, the Service (2012a) also issued a biological opinion to the Department of the Army for the use of additional training lands at Fort Irwin. As part of this proposed action, the Army removed approximately 650 desert tortoises from 18,197 acres of the southern area of Fort Irwin, which had been off-limits to training. The Army would also use an additional 48,629 acres that lie east of the former boundaries of Fort Irwin; much of this parcel is either too mountainous or too rocky and low in elevation to support numerous desert tortoises.

The Service also issued a biological opinion to the Marine Corps that considered the effects of the expansion of the Marine Corps Air Ground Combat Center at Twentynine Palms (Service 2012d). We concluded that the Marine Corps' proposed action, the use of approximately

167,971 acres for training, was not likely to jeopardize the continued existence of the desert tortoise. Most of the expansion area lies within the Johnson Valley Off-way Vehicle Management Area.

The incremental effect of the larger actions (i.e., solar development, the expansions of Fort Irwin and the Marine Corps Air Ground Combat Center) on the desert tortoise is unlikely to be positive, despite the numerous conservation measures that have been (or will be) implemented as part of the actions. The acquisition of private lands as mitigation for most of these actions increases the level of protection afforded these lands; however, these acquisitions do not create new habitat and Federal, State, and privately managed lands remain subject to most of the threats and stresses we discussed previously in this section. Although land managers have been implementing measures to manage these threats, we have been unable, to date, to determine whether the measures have been successful, at least in part because of the low reproductive capacity of the desert tortoise. Therefore, the conversion of habitat into areas that are unsuitable for this species continues the trend of constricting desert tortoise.

As the Service notes in the 5-year review (Service 2010a), "(t)he threats identified in the original listing rule continue to affect the (desert tortoise) today, with invasive species, wildfire, and renewable energy development coming to the forefront as important factors in habitat loss and conversion. The vast majority of threats to the desert tortoise or its habitat are associated with human land uses." Oftedal's work (2002 in Service 2010a) suggests that invasive weeds may adversely affect the physiological health of desert tortoises. Modeling with the spatial decision support system indicates that invasive species likely affect a large portion of the desert tortoise's range; see Appendix 3. Furthermore, high densities of weedy species increase the likelihood of wildfires; wildfires, in turn, destroy native species and further the spread of invasive weeds.

Global climate change is likely to affect the prospects for the long-term conservation of the desert tortoise. For example, predictions for climate change within the range of the desert tortoise suggest more frequent and/or prolonged droughts with an increase of the annual mean temperature by 3.5 to 4.0 degrees Celsius. The greatest increases will likely occur in summer (June-July-August mean increase of as much as 5 degrees Celsius [Christensen et al. 2007 in Service 2010a]). Precipitation will likely decrease by 5 to 15 percent annually in the region, with winter precipitation decreasing by up to 20 percent and summer precipitation increasing by 5 percent. Because germination of the desert tortoise's food plants is highly dependent on cool-season rains, the forage base could be reduced due to increasing temperatures and decreasing precipitation in winter. Although drought occurs routinely in the Mojave Desert, extended periods of drought have the potential to affect desert tortoises and their habitats through physiological effects to individuals (i.e., stress) and limited forage availability. To place the consequences of long-term drought in perspective, Longshore et al. (2003) demonstrated that even short-term drought could result in elevated levels of mortality of desert tortoises. Therefore, long-term drought is likely to have even greater effects, particularly given that the current fragmented nature of desert tortoise habitat (e.g., urban and agricultural development,

highways, freeways, military training areas, etc.) will make recolonization of extirpated areas difficult, if not impossible.

The Service notes in the 5-year review that the combination of the desert tortoise's late breeding age and a low reproductive rate challenges our ability to achieve recovery. When determining whether a proposed action is likely to jeopardize the continued existence of a species, we are required to consider whether the action would "reasonably be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 Code of Federal Regulations 402.02). Although the Service does not explicitly address these metrics in the 5-year review, we have used the information in that document to summarize the status of the desert tortoise with respect to its reproduction, numbers, and distribution.

In the 5-year review, the Service notes that desert tortoises increase their reproduction in high rainfall years; more rain provides desert tortoises with more high quality food (i.e., plants that are higher in water and protein), which, in turn, allows them to lay more eggs. Conversely, the physiological stress associated with foraging on food plants with insufficient water and nitrogen may leave desert tortoises vulnerable to disease (Oftedal 2002 in Service 2010a), and the reproductive rate of diseased desert tortoises is likely lower than that of healthy animals. Young desert tortoises also rely upon high-quality, low-fiber plants (e.g., native forbs) with nutrient levels not found in the invasive weeds that have increased in abundance across its range (Oftedal et al. 2002; Tracy et al. 2004). Compromised nutrition of young desert tortoises likely represents an effective reduction in reproduction by reducing the number that reaches adulthood. Consequently, although we do not have quantitative data that show a direct relationship, the abundance of weedy species within the range of the desert tortoise has the potential to negatively affect the reproduction of desert tortoises and recruitment into the adult population.

Data from long-term study plots, which were first established in 1976, cannot be extrapolated to provide an estimate of the number of desert tortoises on a range-wide basis; however, these data indicate, "appreciable declines at the local level in many areas, which coupled with other survey results, suggest that declines may have occurred more broadly" (Service 2010a). Other sources indicate that local declines are continuing to occur. For example, surveyors found "lots of dead [desert tortoises]" in the western expansion area of Fort Irwin (Western Mojave Recovery Unit) in 2008 (Fort Irwin Research Coordination Meeting 2008). After the onset of translocation, coyotes killed 105 desert tortoises in Fort Irwin's southern translocation area (Western Mojave Recovery Unit); other canids may have been responsible for some of these deaths. Other incidences of predation were recorded throughout the range of the desert tortoise during this time (Esque et al. 2010). Esque et al. (2010) hypothesized that this high rate of predation on desert tortoises was influenced by low population levels of typical prey for coyotes due to drought conditions in previous years. Recent surveys in the Ivanpah Valley (Northeastern Mojave Recovery Unit) for a proposed solar facility detected 31 live desert tortoises and the carcasses of 25 individuals that had been dead less than 4 years (Ironwood 2011); this ratio of carcasses to

live individuals over such a short period of time may indicate an abnormally high rate of mortality for a long-lived animal. In summary, the number of desert tortoises range-wide likely decreased substantially from 1976 through 1990 (i.e., when long-term study plots were initiated through the time the desert tortoise was listed as threatened), although we cannot quantify the amount of this decrease. Additionally, more recent data collected from various sources throughout the range of the desert tortoise suggest that local declines continue to occur (e.g., Bureau et al. 2005, Esque et al. 2010).

The distribution of the desert tortoise has not changed substantially since the publication of the original recovery plan in 1994 (Service 2010a) in terms of the overall extent of its range. Prior to 1994, desert tortoises were extirpated from large areas within their distributional limits by urban and agricultural development (e.g., the cities of Barstow, Lancaster, Las Vegas, St. George, etc.; agricultural areas south of Edwards Air Force Base and east of Barstow), military training (e.g., Fort Irwin, Leach Lake Gunnery Range), and off-road vehicle use (e.g., portions of off-road management areas managed by the Bureau and unauthorized use in areas such as east of California City). Since 1994, urban development around Las Vegas has likely been the largest contributor to habitat loss throughout the range. Desert tortoises have been essentially removed from the 18,197-acre southern expansion area at Fort Irwin (Service 2012c).

The following table depicts acreages of habitat (as modeled by Nussear et al. 2009) within various regions of the desert tortoise's range and of impervious surfaces as of 2006 (Xian et al. 2009). Impervious surfaces include paved and developed areas and other disturbed areas that have zero probability of supporting desert tortoises.

Regions1	Modeled Habitat (acres)	Impervious Surfaces within Modeled Habitat	Percent of Modeled Habitat that is now Impervious
Western Mojave	7,582,092	1,864,214	25
Colorado Desert	4,948,900	494,981	10
Northeast Mojave	7,776,934	1,173,025	15
Upper Virgin River	232,320	80,853	35
Total	20,540,246	3,613,052	18

[1]The regions do not correspond to recovery unit boundaries; we used a more general separation of the range for this illustration.

On an annual basis, the Service produces a report that provides an up-to-date summary of the factors that were responsible for the listing of the species, describes other threats of which we are aware, describes the current population trend of the species, and includes comments of the year's findings. The Service's (2011f) recovery data call report describes the desert tortoise's status as 'declining,' and notes that "(a)nnual range-wide monitoring continues, but the life history of the desert tortoise makes it impossible to detect annual population increases (continued monitoring will provide estimates of moderate- to long-term population trends). Data from the monitoring

program do not indicate that numbers of desert tortoises have increased since 2001. The fact that most threats appear to be continuing at generally the same levels suggests that populations are still in decline. Information remains unavailable on whether mitigation of particular threats has been successful."

In conclusion, we have used the 5-year review (Service 2010a), revised recovery plan (Service 2011a), and additional information that has become available since these publications to review the reproduction, numbers, and distribution of the desert tortoise. The reproductive capacity of the desert tortoise may be compromised to some degree by the abundance and distribution of invasive weeds across its range; the continued increase in human access across the desert likely continues to facilitate the spread of weeds and further affect the reproductive capacity of the species. Prior to its listing, the number of desert tortoises likely declined range-wide, although we cannot quantify the extent of the decline; since the time of listing, data suggest that declines have occurred in local areas throughout the range. The continued increase in human access across the desert continues to expose more desert tortoises to the potential of being killed by human activities. The distributional limits of the desert tortoise's range have not changed substantially since the issuance of the original recovery plan in 1994; however, desert tortoises have been extirpated from large areas within their range (e.g., Las Vegas, other desert cities). The species' low reproductive rate, the extended time required for young animals to reach breeding age, and the multitude of threats that continue to confront desert tortoises combine to render its recovery a substantial challenge.

Status of Critical Habitat of the Desert Tortoise

The Service designated critical habitat for the desert tortoise in portions of California, Nevada, Arizona, and Utah in a final rule published February 8, 1994 (59 Federal Register 5820). The Service designates critical habitat to identify the key biological and physical needs of the species and key areas for recovery and to focus conservation actions on those areas. Critical habitat is composed of specific geographic areas that contain the biological and physical features essential to the species' conservation and that may require special management considerations or protection. These features, which include space, food, water, nutrition, cover, shelter, reproductive sites, and special habitats, are called the primary constituent elements of critical habitat. The specific primary constituent elements of desert tortoise critical habitat are: sufficient space to support viable populations within each of the six 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.

Critical habitat of the desert tortoise would not be able to fulfill its conservation role without each of the primary constituent elements being functional. As examples, having a sufficient

amount of forage species is not sufficient if human-caused mortality is excessive; an area with sufficient space to support viable populations within each of the six recovery units and to provide for movement, dispersal, and gene flow would not support desert tortoises without adequate forage species.

The final rule for designation of critical habitat did not explicitly ascribe specific conservation roles or functions to the various critical habitat units. Rather, it refers to the strategy of establishing recovery units and desert wildlife management areas recommended by the recovery plan for the desert tortoise, which had been published as a draft at the time of the designation of critical habitat, to capture the "biotic and abiotic variability found in desert tortoise habitat" (59 Federal Register 5820, see page 5823). Specifically, we designated the critical habitat units to follow the direction provided by the draft recovery plan (Service 1993) for the establishment of desert wildlife management areas. The critical habitat units in aggregate are intended to protect the variability that occurs across the large range of the desert tortoise; the loss of any specific unit would compromise the ability of critical habitat as a whole to serve its intended function and conservation role.

Despite the fact that desert tortoises do not necessarily need to move between critical habitat units to complete their life histories, both the original and revised recovery plans highlight the importance of these critical habitat units and connectivity between them for the recovery of the species. Specifically, the revised recovery plan states that "aggressive management as generally recommended in the 1994 Recovery Plan needs to be applied within existing (desert) tortoise conservation areas (defined as critical habitat, among other areas being managed for the conservation of desert tortoises) or other important areas ... to ensure that populations remain distributed throughout the species' range .... (Desert tortoise) conservation areas capture the diversity of the Mojave population of the desert tortoise within each recovery unit, conserving the genetic breadth of the species, providing a margin of safety for the species to withstand catastrophic events, and providing potential opportunities for continued evolution and adaptive change .... Especially given uncertainties related to the effects of climate change on desert tortoise populations and distribution, we consider (desert) tortoise conservation areas to be the minimum baseline within which to focus our recovery efforts (pages 34 and 35, Service 2011a)."

The 12 critical habitat units range in area from 85 to 1,595 square miles. However, the optimal reserve size recommended to preserve viable desert tortoise populations was 1,000 square miles (Service 1994); only four critical habitat units meet this threshold. Consequently, for some smaller critical habitat units, their future effectiveness in conserving the desert tortoise is largely dependent on the status of populations immediately adjacent to their boundaries or within intervening linkages that connect these smaller critical habitat units to other protected areas. Although the Service (1994) recommended the identification of buffer zones and linkages for smaller desert tortoise conservation areas, land management agencies have generally not established such areas.

Population viability analyses indicate that reserves should contain from 10,000 to 20,000 adult desert tortoises to maximize estimated time to extinction (i.e., 390 years or so, depending on rates of population change; Service 1994). However, during the three most recent years of monitoring within the critical habitat units, only three (in 2009 and 2010) to five (in 2008) of the critical habitat units met this target (McLuckie et al. 2010; Service 2009, 2010b, 2010c). Some critical habitat units share boundaries and form contiguous blocks (e.g. Superior-Cronese and Fremont-Kramer Critical Habitat Units), and those blocks in California include combined estimated abundances of over 10,000 adult desert tortoises. These blocks are adjacent to smaller, more isolated units (e.g., Ord-Rodman Critical Habitat Unit) that are not currently connected to other protected habitat by preserved habitat linkages.

We did not designate the Desert Tortoise Natural Area and Joshua Tree National Park in California and the Desert National Wildlife Refuge in Nevada as critical habitat because they are "primarily managed as natural ecosystems" (59 Federal Register 5820, see page 5825) and provide adequate protection to desert tortoises. Since the designation of critical habitat, Congress increased the size of Joshua Tree National Park and created the Mojave National Preserve. A portion of the expanded boundary of Joshua Tree National Park lies within critical habitat of the desert tortoise; portions of other critical habitat units lie within the boundaries of the Mojave National Preserve.

Within each critical habitat unit, both natural and anthropogenic factors affect the function of the primary constituent elements of critical habitat. As an example of a natural factor, in some specific areas within the boundaries of critical habitat, such as within and adjacent to dry lakes, some of the primary constituent elements are naturally absent because the substrate is extremely silty; desert tortoises do not normally reside in such areas. Comparing the acreage of desert tortoise habitat as depicted by Nussear et al.'s (2009) model to the gross acreage of the critical habitat units demonstrates quantitatively that the entire area within the boundaries of critical habitat likely does not support the primary constituent elements; see the following table. The acreage for modeled habitat is for the area in which the probability that desert tortoises are present is greater than 0.5. The acreages of modeled habitat are from Service (2010b); they do not include loss of habitat due to human-caused impacts. The difference between gross acreage and modeled habitat is 653,214 acres; that is, approximately 10 percent of the gross acreage of the designated critical habitat is not considered modeled habitat.

Critical Habitat Unit	Gross Acreage	Modeled Habitat
Superior-Cronese	766,900	724,967
Fremont-Kramer	518,000	501,095
Ord-Rodman	253,200	184,155
Pinto Mountain	171,700	144,056
Piute-Eldorado	970,600	930,008
Ivanpah Valley	632,400	510,711
Chuckwalla	1,020,600	809,319
Chemehuevi	937,400	914,505
Gold Butte-Pakoon	488,300	418,189
Mormon Mesa	427,900	407,041
Beaver Dam Slope	204,600	202,499
Upper Virgin River	54,600	46,441
Totals	6,446,200	5,792,986

Condition of the Primary Constituent Elements of Critical Habitat

Human activities can have obvious or more subtle effects on the primary constituent elements. The grading of an area and subsequent construction of a building removes the primary constituent elements of critical habitat; this action has an obvious effect on critical habitat. The revised recovery plan identifies human activities such as urbanization and the proliferation of roads and highways as threats to the desert tortoise and its habitat; these threats are examples of activities that have a clear effect on the primary constituent elements of critical habitat.

We have included the following paragraphs from the revised recovery plan for the desert tortoise (Service 2011a) to demonstrate that other anthropogenic factors affect the primary constituent elements of critical habitat in more subtle ways. All references are in the revised recovery plan (i.e., in Service 2011a); we have omitted some information from the revised recovery plan where the level of detail was unnecessary for the current discussion.

> Surface disturbance from OHV activity can cause erosion and large amounts of dust to be discharged into the air. Recent studies on surface dust impacts on gas exchanges in Mojave Desert shrubs showed that plants encrusted by dust have reduced photosynthesis and decreased water-use efficiency, which may decrease primary production during seasons when photosynthesis occurs (Sharifi et al. 1997). Sharifi et al. (1997) also showed reduction in maximum leaf conductance, transpiration, and water-use efficiency due to dust. Leaf and stem temperatures were also shown to be higher in plants with leaf-surface dust. These effects may also impact desert annuals, an important food source for [desert] tortoises.
>
> OHV activity can also disturb fragile cyanobacterial-lichen soil crusts, a dominant source of nitrogen in desert ecosystems (Belnap 1996). Belnap (1996) showed that

> anthropogenic surface disturbances may have serious implications for nitrogen budgets in cold desert ecosystems, and this may also hold true for the hot deserts that [desert] tortoises occupy. Soil crusts also appear to be an important source of water for plants, as crusts were shown to have 53 percent greater volumetric water content than bare soils during the late fall when winter annuals are becoming established (DeFalco et al. 2001). DeFalco et al. (2001) found that non-native plant species comprised greater shoot biomass on crusted soils than native species, which demonstrates their ability to exploit available nutrient and water resources. Once the soil crusts are disturbed, non-native plants may colonize, become established, and out-compete native perennial and annual plant species (DeFalco et al. 2001, D'Antonio and Vitousek 1992). Invasion of non-native plants can affect the quality and quantity of plant foods available to desert tortoises. Increased presence of invasive plants can also contribute to increased fire frequency.
>
> Proliferation of invasive plants is increasing in the Mojave and Sonoran deserts and is recognized as a substantial threat to desert tortoise habitat. Many species of non-native plants from Europe and Asia have become common to abundant in some areas, particularly where disturbance has occurred and is ongoing. As non-native plant species become established, native perennial and annual plant species may decrease, diminish, or die out (D'Antonio and Vitousek 1992). Land managers and field scientists identified 116 species of non-native plants in the Mojave and Colorado deserts (Brooks and Esque 2002).
>
> Increased levels of atmospheric pollution and nitrogen deposition related to increased human presence and combustion of fossil fuels can cause increased levels of soil nitrogen, which in turn may result in significant changes in plant communities (Aber et al. 1989). Many of the non-native annual plant taxa in the Mojave region evolved in more fertile Mediterranean regions and benefit from increased levels of soil nitrogen, which gives them a competitive edge over native annuals. Studies at three sites within the central, southern, and western Mojave Desert indicated that increased levels of soil nitrogen can increase the dominance of non-native annual plants and promote the invasion of new species in desert regions. Furthermore, increased dominance by non-native annuals may decrease the diversity of native annual plants, and increased biomass of non-native annual grasses may increase fire frequency (Brooks 2003).

This summary from the revised recovery plan (Service 2011a) demonstrates how the effects of human activities on habitat of the desert tortoise are interconnected. In general, surface disturbance causes increased rates of erosion and generation of dust. Increased erosion alters additional habitat outside of the area directly affected by altering the nature of the substrate, removing shrubs, and possibly destroying burrows and other shelter sites. Increased dust affects photosynthesis in the plants that provide cover and forage to desert tortoises. Disturbed substrates and increased atmospheric nitrogen enhance the likelihood that invasive species will

become established and outcompete native species; the proliferation of weedy species increases the risk of large-scale fires, which further move habitat conditions away from those that are favorable to desert tortoises.

The following paragraphs generally describe how the threats described in the revised recovery plan affect the primary constituent elements of critical habitat of the desert tortoise.

Sufficient space to support viable populations within each of the six recovery units and to provide for movement, dispersal, and gene flow.

In considering the following discussion, bear in mind the information provided previously in this biological opinion regarding the recommended and actual sizes of critical habitat units for the desert tortoise. The original recovery team based the recommended size of desert wildlife management areas on the amount of space required to maintain viable populations. (The recovery plan [Service 1994] defined conservation areas for the desert tortoise as 'desert wildlife management areas;' we based the boundaries of critical habitat on the recovery team's general recommendation for the desert wildlife management areas.) The current low densities of desert tortoises within critical habitat units exacerbate the difficulties of effecting recovery within these areas.

Urban and agricultural development, concentrated use by off-road vehicles, and other activities of this nature completely remove habitat. Although we are aware of local areas within the boundaries of critical habitat that have been heavily disturbed, we do not know of any areas that have been disturbed to the intensity and extent that this primary constituent element has been compromised. To date, the largest single loss of critical habitat is the use of 18,197 acres of additional training land in the southern portion of Fort Irwin. In our biological opinion for that proposed action (Service 2012a), we stated:

> The proposed action would essentially eliminate the primary constituent elements from approximately 2.40 percent of the Superior-Cronese Critical Habitat Unit; additionally, the conservation role of the remainder of this critical habitat unit and the other critical habitat units has been compromised by substantial human impact on the second and sixth primary constituent elements. However, the protective measures that the Army implemented as part of the proposed action offset, at least to some extent, the adverse effects of the use of the additional training lands in the southern expansion area. Consequently, we have concluded that, although the second and sixth primary constituent elements are not functioning appropriately throughout most of designated critical habitat of the desert tortoise and the proposed action would result in substantial disturbance to 18,197 acres of the Superior-Cronese Critical Habitat Unit, the change in the condition of critical habitat brought about by the Army's proposed action (i.e., use of the southern

expansion area for training and implementation of the conservation actions) is not likely to cause an overall decrease in the conservation value and function of the Superior-Cronese Critical Habitat Unit.

The widening of existing freeways likely caused the second largest loss of critical habitat. Despite these losses of critical habitat, which occur in a linear manner, the critical habitat units continue to support sufficient space to support viable populations within each of the six recovery units.

In some cases, major roads likely disrupt the movement, dispersal, and gene flow of desert tortoises. Highways 58 and 395 in the Fremont-Kramer Critical Habitat Unit and Fort Irwin Road in the Superior-Cronese Critical Habitat Unit are examples of large and heavily travelled roads that likely disrupt movement, dispersal, and gene flow. Roads that have been fenced and provided with underpasses may alleviate this fragmentation to some degree; however, such facilities have not been in place for sufficient time to determine whether they will eliminate fragmentation.

The threats of invasive plant species described in the revised recovery plan generally do not result in the removal of this primary constituent element because they do not convert habitat into impervious surfaces, as would urban development.

Sufficient quality and quantity of forage species and the proper soil conditions to provide for the growth of these species.

This primary constituent element addresses the ability of critical habitat to provide adequate nutrition to desert tortoises. As described in the revised recovery plan and 5-year review, grazing, historical fire, invasive plants, altered hydrology, drought, wildfire potential, fugitive dust, and climate change/temperature extremes contribute to the stress of "nutritional compromise." Paved and unpaved roads through critical habitat of the desert tortoise provide avenues by which invasive native species disperse; these legal routes also provide the means by which unauthorized use occurs over large areas of critical habitat. Nitrogen deposition from atmospheric pollution likely occurs throughout all of the critical habitat units and exacerbates the effects of the disturbance of substrates. Because paved and unpaved roads are so widespread through critical habitat, this threat has compromised the conservation value and function of critical habitat throughout the range of the desert tortoise, to some degree. Appendix 3 depicts the routes by which invasive weeds have access to critical habitat; the routes shown on this map are a subset of the actual number of routes that actually cross critical habitat of the desert tortoise.

Suitable substrates for burrowing, nesting, and overwintering.

Surface disturbance, motor vehicles traveling off route, use of OHV management areas, OHV

events, unpaved roads, grazing, historical fire, wildfire potential, altered hydrology, and climate change leading to shifts in habitat composition and location, storms, and flooding can alter substrates to the extent that they are no longer suitable for burrowing, nesting, and overwintering. Erosion caused by these activities can alter washes to the extent that desert tortoise burrows placed along the edge of a wash, which is a preferred location for burrows, could be destroyed. We expect that the area within critical habitat that is affected by off-road vehicle use to the extent that substrates are no longer suitable is relatively small in relation to the area that desert tortoises have available for burrowing, nesting, and overwintering; consequently, off-road vehicle use has not had a substantial effect on this primary constituent element.

Most livestock allotments have been eliminated from within the boundaries of critical habitat. Of those that remain, livestock would compact substrates to the extent that they would become unsuitable for burrowing, nesting, and overwintering only in areas of concentrated use, such as around watering areas and corrals. Because livestock grazing occurs over a relatively small portion of critical habitat and the substrates in most areas within livestock allotments would not be substantially affected, suitable substrates for burrowing, nesting, and overwintering remain throughout most of the critical habitat units.

Burrows, caliche caves, and other shelter sites.

Human-caused effects to burrows, caliche caves, and other shelter sites likely occur at a similar rate as effects to substrates for burrowing, nesting, and overwintering for the same general reasons. Consequently, sufficient burrows, caliche caves, and other shelter sites remain throughout most of the critical habitat units.

Sufficient vegetation for shelter from temperature extremes and predators.

In general, sufficient vegetation for shelter from temperature extremes and predators remains throughout critical habitat. In areas where large fires have occurred in critical habitat, many of the shrubs that provide shelter from temperature extremes and predators have been destroyed; in such areas, cover sites may be a limiting factor. The proliferation of invasive plants poses a threat to shrub cover throughout critical habitat as the potential for larger and more frequent wildfires increases.

In 2005, wildfires in Nevada, Utah, and Arizona burned extensive areas of critical habitat (Service 2010a). Although different agencies report slightly different acreages, the following table provides an indication of the scale of the fires.

Critical Habitat Unit	Total Area Burned (acres)	Percent of the Critical Habitat Unit Burned
Beaver Dam Slope	53,528	26
Gold-Butte Pakoon	65,339	13
Mormon Mesa	12,952	3
Upper Virgin River	10,557	19

The revised recovery plan notes that the fires caused statistically significant losses of perennial plant cover, although patches of unburned shrubs remained. Given the patchiness with which the primary constituent elements of critical habitat are distributed across the critical habitat units and the varying intensity of the wildfires, we cannot quantify precisely the extent to which these fires disrupted the function and value of the critical habitat.

Habitat protected from disturbance and human-caused mortality.

In general, the Federal agencies that manage lands within the boundaries of critical habitat have adopted land management plans that include implementation of some or all of the recommendations contained in the original recovery plan for the desert tortoise. (See pages 70 to 72 of Service 2010a.) To at least some degree, the adoption of these plans has resulted in the implementation of management actions that are likely to reduce the disturbance and human-caused mortality of desert tortoises. For example, these plans resulted in the designation of open routes of travel and the closure (and, in some cases, physical closure) of unauthorized routes. Numerous livestock allotments have been relinquished by the permittees; cattle no longer graze these allotments. Because of these planning efforts, the Bureau's record of decision included direction to withdraw some areas of critical habitat from mineral entry. Because of actions on the part of various agencies, many miles of highways and other paved roads have been fenced to prevent desert tortoises from wandering into traffic and being killed. The Service and other agencies of the Desert Managers Group in California are implementing a plan to remove common ravens that prey on desert tortoises and to undertake other actions that would reduce subsidies (i.e., food, water, sites for nesting, roosting, and perching, etc.) that facilitate their abundance in the California Desert (Service 2008b).

Despite the implementation of these actions, disturbance and human-caused mortality continue to occur in many areas of critical habitat (which overlap the desert wildlife management areas for the most part and are the management units for which most data are collected) to the extent that the conservation value and function of critical habitat is, to some degree, compromised. For example, many highways and other paved roads in California remain unfenced. Twelve desert tortoises were reported to be killed on paved roads from within Mojave National Preserve in 2011, and we fully expect that desert tortoises are being killed at similar rates on many other

roads, although these occurrences are not discovered and reported as diligently as by the National Park Service. Employees of the Southern California Gas Company reported two desert tortoises in 2011 that were crushed by vehicles on unpaved roads.

Unauthorized off-road vehicle use continues to disturb habitat and result in loss of vegetation within the boundaries of critical habitat (e.g., Coolgardie Mesa in the Western Mojave Recovery Unit); although we have not documented the death of desert tortoises as a direct result of this activity, it likely occurs. Additionally, the habitat disturbance caused by this unauthorized activity exacerbates the spread of invasive plants, which displace native plants that are important forage for the desert tortoise, thereby increasing the physiological stress faced by desert tortoises.

Although the Bureau has approved, through its land use planning processes, the withdrawal of areas of critical habitat from mineral entry, it has not undertaken the administrative procedures to complete withdrawals in all areas. Absent this withdrawal, new mining claims can be filed and further disturbance of critical habitat could occur.

Finally, the Bureau has not allowed the development of solar power plants on public lands within the boundaries of its desert wildlife management areas (which largely correspond to the boundaries of critical habitat). Conversely, the County of San Bernardino is considering the approval of the construction and operation of at least two such facilities within the boundaries of the Superior-Cronese Critical Habitat Unit north of Interstate 15 near the Minneola Road exit.

Summary of the Status of Critical Habitat of the Desert Tortoise

As noted in the revised recovery plan for the desert tortoise and 5-year review (Service 2011a, 2010a), critical habitat of the desert tortoise is subject to landscape level impacts in addition to the site-specific effects of individual human activities. On the landscape level, atmospheric pollution is increasing the level of nitrogen in desert substrates; the increased nitrogen exacerbates the spread of invasive plants, which outcompete the native plants necessary for desert tortoises to survive. As invasive plants increase in abundance, the threat of large wildfires increases; wildfires have the potential to convert the shrubland-native annual plant communities upon which desert tortoises depend to a community with fewer shrubs and more invasive plants. In such a community, shelter and forage would be more difficult for desert tortoises to find. Invasive plants have already compromised the conservation value and function of critical habitat to some degree with regard to the second primary constituent element (i.e., sufficient quality and quantity of forage species and the proper soil conditions to provide for the growth of these species). These effects likely extend to the entirety of critical habitat, given the numerous routes by which invasive plants can access critical habitat and the large spatial extent that is subject to nitrogen from atmospheric pollution. Appendix 3 demonstrates the extent of the threat of invasive plants; Appendix 2 illustrates the 12 critical habitat units of the desert tortoise and the aggregate stress that multiple threats, including invasive plants, place on critical habitat.

Critical habitat has been compromised to some degree with regard to the last primary constituent element (i.e., habitat protected from disturbance and human-caused mortality) as a result of the wide variety of human activities that continues to occur within its boundaries. These effects result from the implementation of discrete human activities and are thus more site-specific in nature.

Although the remaining primary constituent elements have been affected to some degree by human activities, these impacts have not, to date, substantially compromised the conservation value and function of the critical habitat units. We have reached this conclusion primarily because the effects are localized and thus do not affect the conservation value and function of large areas of critical habitat.

Land managers have undertaken actions to improve the status of critical habitat. For example, as part of its efforts to offset the effects of the use of additional training maneuver lands at Fort Irwin (Service 2004), the Army acquired the private interests in the Harper Lake and Cronese Lakes allotments, which are located within critical habitat in the Western Mojave Recovery Unit; as a result, cattle have been removed from these allotments. Livestock have been removed from numerous other allotments through various means throughout the range of the desert tortoise. The retirement of allotments assists in the recovery of the species by eliminating disturbance to the primary constituent elements of critical habitat by cattle and range improvements.

ENVIRONMENTAL BASELINE

Description of the Action Area

The implementing regulations for section 7(a)(2) of the Act define the "action area" as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 Code of Federal Regulations 402.02). We consider the action area to include the footprint of Naval Air Weapons Station, which consists of 1,095,680 acres.

Existing Conditions

The Naval Air Weapons Station is divided into the North and South Ranges, which are geographically separate areas. The North Range supports most of the Naval Air Weapons Station's infrastructure in its southern section, adjacent to the City of Ridgecrest. Much of the northern portion of the North Range lies at elevations that are higher than where desert tortoises normally occur. The South Range includes target areas in its southern portion and, in general, supports more desert tortoise habitat than the North Range.

The plant communities on the Naval Air Weapons Station vary from barren playas, alkali sink, saltbush scrub, and creosote bush scrub at lower elevations, to sagebrush scrub and pinyon

woodland found in the Coso and Argus ranges. Mojave mixed woody scrub is the most common plant community type, followed by creosote bush scrub.

Test and target facilities on the Naval Air Weapons Station account for 19,035 acres, with 13,106 acres in desert tortoise habitat (including 401 acres in desert tortoise critical habitat). Most areas that are repeatedly used for targets or tests are devoid of vegetation. Some paved roads and numerous unpaved roads cross the facility. Much of the Naval Air Weapons Station is undisturbed.

Previous Consultations in the Action Area

The Service (1991) issued a biological opinion to the Navy regarding the construction and operation of a landing strip in the Randsburg Wash area of the South Range. We concluded that the loss of 14.5 acres of habitat and the deaths of 3 desert tortoises over the life of the project were not likely to jeopardize the continued existence of the desert tortoise.

The Service (1992) issued a biological opinion to the Navy that considered the effects of ongoing activities at the Naval Air Weapons Station on the desert tortoise. This consultation established a set of protocols under which the Navy conducted its operations. We concluded that the proposed action, which we estimated would result in the deaths of 40 desert tortoises over time, was not likely to jeopardize the continued existence of the desert tortoise. The table in this section depicts numbers of desert tortoises that have been injured, killed, and moved from harm's way as a result of Navy activities (Navy 2012).

After the designation of critical habitat for the desert tortoise in 1994, the Service (1995) issued a biological opinion that considered the effects of ongoing activities at the Naval Air Weapons Station on critical habitat of the desert tortoise. This consultation evaluated the same set of protocols upon which the Navy and Service consulted in 1992. We concluded that the proposed action was not likely to result in the destruction or adverse modification of critical habitat.

The Service (2008a) issued a biological opinion to the Bureau of Land Management regarding the effects on the desert tortoise of the construction and operation of a water pipeline from the Coso Hay Ranch to the Coso geothermal area of the North Range at the Naval Air Weapons Station. The proposed action would cause the disturbance of approximately 17 acres of habitat within the boundaries of the Naval Air Weapons Station and 60 acres overall, although some of the disturbed area was not desert tortoise habitat. We concluded that few desert tortoises would be injured or killed by the proposed action. Because we could not provide a specific number of animals that would likely be injured or killed, we used the terms and conditions of the biological opinion to establish a re-initiation trigger; that is if more than 2 desert tortoises are killed or injured in any 12-month period by work associated with the Coso Hay Ranch pipeline project,

the Bureau of Land Management would need to re-initiate formal consultation. We concluded that the proposed action was not likely to jeopardize the continued existence of the desert tortoise.

The following table depicts the numbers of desert tortoises that have been injured, killed, and moved from harm's way as a result of Navy activities (Navy 2012). As in every action that covers a large area, we expect that the Navy did not detect all injuries and mortalities. Because the number of injured and dead desert tortoises was lower than the number moved from harm's way, we expect that the Navy's protective measures are generally functioning well and that few animals have died or been injured as a result of the Navy's activities. No desert tortoises were injured, killed, or moved from harm's way in 1996, 1997, 1999, 2001 through 2003, 2005 through 2008, and 2011 (Navy 2012).

	Number of Desert Tortoises			
Year	**Killed**	**Injured**	**Cause**	**Moved from Harm's Way**
1993	0	1	vehicle	1 from test site; 2 from roads
1994	0	0		6 from roads
1995	0	0		6 from roads
1998	1	0	vehicle	0
2004	1	0	rock quarry	0
2009	2	0	vehicle	2 from roads
2010	2	0	vehicle	12 from roads
Total	6	1		29

Status of Desert Tortoise in the Action Area

Kiva Biological Consulting (1991) conducted a relatively comprehensive survey and estimated the distribution and density of desert tortoise at the Naval Air Weapons Station. The surveyors walked 370 transects (each transect was 1.5 miles long by 10 yards wide. Kiva Biological Consulting concluded that the North Range supported 7 square miles of habitat that supported 21 to 50 desert tortoises per square mile and 129 square miles that supported fewer than 20 animals per square mile. On the South Range, Kiva Biological Consulting identified 30 square miles of habitat that supported 21 to 50 desert tortoises per square mile, 23.5 square miles of habitat that supported 20 animals per square mile, and 165.5 square miles of habitat that supported fewer than 20 animals per square mile.

Epsilon Systems Solutions, Inc. (2005) surveyed the Naval Air Weapons Station and concluded that the desert tortoise was widely distributed across the installation with relatively low abundance in most areas. Each of the ranges had three regions with estimated abundances of more than five desert tortoises per square mile. On the North Range, this included portions of Coso Basin, Baker Range, and Salt Wells; on the South Range, Superior Valley and the west and east ends of Pilot Knob Valley supported the highest densities.

The following table is based on information in Kiva Biological Consulting and Epsilon Systems Solutions, Inc. (2005).

Abundance Class (desert tortoises per square mile)	Square miles	Percentage of the Area
0-5	1,117	84.0
6-20	52	15.7
21-50	4.9	0.3
Total	1,173	

The results presented here seem to indicate that desert tortoises increased the area over which they are distributed on the Naval Air Weapons Station from 1991 to 2005 (354 square miles to 1,173). We expect that this change is an artifact of the way the surveyors reported their results rather than an increase in occupied habitat. That is, the 1,173 square miles may include areas where surveyors did not detect any desert tortoises or sign, whereas the 354 square miles may have excluded such areas.

The density of desert tortoises seems to have decreased between the times of the two surveys, based on the fact that Kiva Biological Consulting reported 37 square miles of densities in the 21 to 50 animals per square mile range in 1991 and Kiva Biological Consulting and Epsilon Systems Solutions reported 4.9 square miles of this density in 2005. Again, we expect that these numbers may not be precise; however, the decrease in the area occupied by higher densities of desert tortoises is consistent with results of other studies from throughout the Western Mojave Recovery Unit.

Status of Desert Tortoise Critical Habitat in the Action Area

A portion of the Superior-Cronese Critical Habitat Unit overlaps the southern portion of the South Range (Navy 2012). This area was in use as a target area at the time the Service designed critical habitat.

The Naval Air Weapons Station contains 89,310 acres of critical habitat of the desert tortoise; it is located along the southern boundary of the South Range. (See figure 4-1 in the biological assessment [Navy 2012]). The Navy did not provide information on the overall condition of the primary constituent elements of critical habitat within the boundaries of the Naval Air Weapons Station. In general, we expect that the condition of the primary constituent elements within the installation is similar to that within the remainder of the Superior-Cronese Critical Habitat Unit. That is, although we expect that the first, third, fourth, and fifth primary constituent elements have been affected to some degree by the Navy's activities, these impacts have not, to date, substantially compromised the conservation value and function of the critical habitat. We expect that invasive plants have compromised the conservation value and function of critical habitat to

some degree with regard to the second primary constituent element (i.e., sufficient quality and quantity of forage species and the proper soil conditions to provide for the growth of these species). Because most of the critical habitat within the Naval Air Weapons Station experiences fewer disturbances than public lands off base, we expect that the sixth primary constituent element (i.e., habitat protected from disturbance and human caused mortality) has not been appreciably affected by human activities.

The Navy's activities contribute to the less than prime condition of the second primary constituent element. Test and target sites occupy 401 acres of critical habitat (Navy 2012). Even though the Navy does not employ high explosives in these target areas, use of the target sites starts fires that spread to adjacent habitat. (The Navy uses 'spot charges,' which are similar to shotgun shells.) Between 1998 and 2011, the target areas in Superior Valley experienced 199 fires, burning 1091.7 acres (1.22 percent of the critical habitat in the action area). Half of these fires occurred in 2005; the remaining fires were clustered in the few subsequent years. The 2005 fires followed a winter of higher-than-average rainfall, which prompted heavy growth of non-native grasses that are extremely proficient at carrying wildfires. These fires kill native shrubs, upon which desert tortoises depend for shelter; consequently, fires also degrade the function and value of the fifth primary constituent element, which is 'sufficient vegetation for shelter from temperature extremes and predators.' Fires also foster the spread of non-native grasses, which outcompete the native annual plants upon which desert tortoises depend for nutrition, thereby further degrading the function and value of the second primary constituent element.

The following table depicts the number and size of fires within critical habitat on the Naval Air Weapons Station. We adapted the table from biological assessment (Navy 2012) to include only years in which fires occurred; the Navy notes that fires are mostly burning adjacent to targets and that at least some fires have likely burned the same areas more than once.

Year	Number of Fires	Acres Burned
1998	18	375
1999	1	7.6
2000	1	0.1
2005	101	70
2006	36	170
2007	31	18
2008	5	1
2011	6	450
Total	199	1,091.7

EFFECTS OF THE ACTION

As we described in the Description of the Proposed Action section of this biological opinion, the Navy and Service evaluated each of the Navy's proposed activities and listed the aspects of the activity that may affect desert tortoises or their habitat (including critical habitat). In this section

of the analysis, we will provide a general description of these various aspects that may affect desert tortoises and their habitat (including critical habitat).

The Navy (2012) anticipates that the development of new facilities, infrastructure, or new or expanded targets may require the disturbance of 150 acres within critical habitat and 1,250 acres outside of critical habitat. The Navy also estimates that the operation of the Naval Air Weapons Station could result in the mortality of up to four desert tortoises per year. These estimates provide the best available information on the scale and intensity of the Navy's activities over the next 25 years. Consequently, we will use these estimates as the basis for our analysis in this biological opinion.

Driving Off Roads

Desert Tortoise

In general, the use of vehicle off of roads (paved or unpaved) can injure or kill desert tortoises and trap them in their collapsed burrows. In contrast to recreational use, where numerous vehicles travel off road at high speeds and with little or no regard to natural resources, the Navy's use of vehicles off road would be limited to relatively infrequent circumstances and occur at low speeds; most use of vehicles off roads would also be monitored by staff that are trained to detect and avoid desert tortoises and their burrows. The off-road activities associated with range-ground operations and the expenditure of ordnance and energetic materials are expected to be infrequent (an average of once a month), for the purpose of retrieving misplaced materials (Campbell 2012). Consequently, we expect that use of vehicles off paved or unpaved roads is likely to injure or kill few desert tortoises.

Critical Habitat

In general, the use of vehicles off of roads (paved or unpaved) can destroy plants needed for cover and food, erode and compact substrates, cause proliferation of weeds, and increase in the number and location of wildfires. We do not expect that the use of vehicles off of roads, at the extent likely to be conducted by the Navy, would have a measurable effect on the first primary constituent element of critical habitat (sufficient space to support viable populations within each of the six recovery units and to provide for movement, dispersal, and gene flow). We have reached this conclusion because the Navy's use would be infrequent and monitored to the extent that it would not reduce the amount of habitat within critical habitat and prevent movement, dispersal, and gene flow.

The second through fifth primary constituent elements (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) are related to the

biological and physical aspects of critical habitat. We expect the low level of use of vehicles off roads, which will be appropriately monitored, would not affect the function of these aspects of the desert tortoise's habitat in a measurable manner.

This aspect of the Navy's activities would minimally affect the sixth primary constituent element (habitat protected from disturbance and human caused mortality) because it would occur infrequently and be monitored.

Driving on Roads

Desert Tortoise

Although they are generally more easily observed on roads, vehicles often travel at high speeds, reducing the likelihood of drivers detecting and avoiding desert tortoises. Rises and turns in roads also decrease the ability of drivers to detect desert tortoises. Along heavily used roads, the number of desert tortoises is depressed for some distance from the edge of the road as a result of road-associated mortality; this distance varies with the level of use of the road. In general, vehicle use is likely to result in at least some mortalities of and injuries to desert tortoises; the extent of the loss is related to the condition of the road, the time of the year, the abundance of desert tortoises, and the awareness of the driver. Even the most careful drivers may occasionally strike a desert tortoise.

To date, vehicles striking tortoises on established roadways account for all but one of the reported mortalities in the action area. Additionally, personnel have moved many more from roadways. The Navy addresses this threat in its protective measures by posting signs for reduced speed limits where appropriate. We expect this threat to persist throughout the action area. The increase in tempo of operations may exacerbate the level of threat to desert tortoises.

Critical Habitat

The use of existing roads will not affect the second through fifth primary constituent elements because these physical and biological aspects of critical habitat are no longer present within roads. Roads that experience high levels of traffic can essentially form a barrier to movement, dispersal, and gene flow (first primary constituent element); we do not expect that any roads within the Naval Air Weapons Station within desert tortoise habitat experience this level of traffic. High levels of traffic may affect the sixth primary constituent element (habitat protected from disturbance and human caused mortality) by increasing the number of desert tortoises that are injured or killed; even with the expected increase in tempo of operations, we do not anticipate that traffic levels in desert tortoise habitat would rise to such levels.

Ground Disturbance

Desert Tortoise

We consider ground disturbance to include any activity where the Navy's activities disrupt vegetation and substrate through the use of heavy equipment and materials. Desert tortoises may be injured or killed or trapped in their burrows during these activities. Some of the Navy's activities that may cause negligible amounts ground disturbance; for example, the Navy's management of burros and wild horses would result in a limited amount of disturbance when animals are rounded up to be removed from the wild. Conversely, the construction of a new target or building may result in ground disturbance over a larger area.

Because the Navy would use standard and successful methods and experienced staff to avoid injuring or killing desert tortoises during ground-disturbing activities in desert tortoise habitat, we expect that relatively few desert tortoises are likely to be injured or killed as a result of ground disturbance.

Critical Habitat

Ground disturbance has the potential to adversely affect all the primary constituent elements of critical habitat. Small amounts of ground disturbance that are temporary in nature would generally affect critical habitat less than larger areas of permanent disturbance, although some indirect effects of smaller projects (e.g., the proliferation of weeds) can extend well beyond the temporal and spatial footprint of a project..

Explosions

Desert Tortoise

Ordnance or other material materials associated with explosions could strike a desert tortoise directly. Such events are likely extremely rare, given the large area of the target sites, the sparse distribution of desert tortoises, and the relatively small area that the explosion would affect. Additionally, the Navy's standard practice is to check areas before explosions occur and to remove desert tortoises. Some potential exists that large explosions can cause vibrations that would cause nearby burrows to collapse and trap desert tortoises inside.

Desert tortoises may be injured by noise associated with explosions. Bowles et al. (1999) found that subsonic and supersonic aircraft noise did not elicit substantial responses from desert tortoises. If a desert tortoise were close to a large explosion, however, we expect that the noise would have the potential to cause physical damage to the animal. Because the Navy inspects areas and would remove desert tortoises before explosions occur, few desert tortoises are likely to be injured or killed by explosions.

Given that use of the target sites can reasonably be expected to start fires under the appropriate conditions, we will consider these fires as a likely effect of explosions. Fires can injure or kill desert tortoises that are away from their burrows; the use of fire equipment to fight fires could also kill desert tortoises. Larger fires during times of the year and day when desert tortoises are active are more likely to injure or kill desert tortoises than smaller fires when desert tortoises are inactive (i.e., in their burrows). Desert tortoises are less likely to be present in areas that have repeatedly burned, where non-native grasses predominate; to the extent that at least some fires occur in such areas, the risk of desert tortoises being injured or killed by fire is somewhat reduced. The increase of the tempo of operations may result in a higher fire risk; however, the risk may not be proportionately the same because not all actions cause fires and the removal of non-native grasses by one fire may prevent subsequent fires in that area until the next growing season.

The Navy's fire management measures (primarily the removal of excessive vegetation around targets) are likely to reduce the potential for fires started at target sites. This measure is protective of desert tortoises because fires can kill desert tortoises that may be above ground.

Critical Habitat

The Navy's use of explosives would not directly impair the value and function of critical habitat with regard to the first primary constituent element (sufficient space to support viable populations within each of the six recovery units and to provide for movement, dispersal, and gene flow). We have reached this conclusion because the explosions occur in relatively small areas that are used repeatedly. Even with the increase in the tempo of operations, most explosions would likely occur in areas that have been previously used for such work. Indirectly, if a large fire spread from target sites, habitat conditions could be altered to the extent that desert tortoises would no longer traverse such areas.

Large explosions would likely alter the quality and quantity of forage species and the soil conditions to provide for the growth of these species in new target areas (the second primary constituent element); target areas that have been used previously likely no longer support these features. Smaller explosions likely have little or no direct effect on this primary constituent element. As we have discussed previously, fire spreading from a target area would likely reduce the value and function of this primary constituent element.

Large explosions likely damage substrates for burrowing, nesting, and overwintering (third primary constituent element) and burrows, caliche caves, and other shelter sites (fourth primary constituent element). Because most explosions would occur in previously used, defined target areas, damage to substrates and shelter sites is likely to be minimal. Fire may affect substrates and shelter sites if it removes sufficient plant cover to increase erosion during storm events. Large explosions would remove vegetation that desert tortoises use for shelter from temperature extremes and predators (the fifth primary constituent element), but generally in a limited area.

This adverse effect would be reduced by the use of existing target sites. Fire would affect shelter sites provided by shrubs if it spreads beyond the disturbed target site.

The repeated use of target sites would reduce the potential for explosions to have a measurable effect on the sixth primary constituent element (habitat protected from disturbance and human-caused mortality) because the disturbance and potential for mortality of desert tortoises would be limited to a relatively small portion of critical habitat. As with the other primary constituent elements, fire that spreads beyond disturbed areas around the target sites would increase the adverse effect.
The Navy's fire management measures (primarily the removal of excessive vegetation around targets) are likely to reduce the potential that fires started at target sites would have a measurable effect on the primary constituent elements of critical habitat of the desert tortoise.

Non-native Plant Species

Desert Tortoise

Vehicles, ground disturbance, fire, grazing by livestock and burros, and other human activities contribute to the dispersal of non-native plant species. These non-native plants include species that are already present in the California desert and newly introduced species. Non-native plants can alter the quality and quantity of plant foods available to desert tortoises and thereby affect their nutritional intake, as we discussed in the Status of the Species and Critical Habitat section of this biological opinion.

Critical Habitat

The spread of non-native plant species may impair the value and function of the first primary constituent element (sufficient space to support viable populations within each of the six recovery units and to provide for movement, dispersal, and gene flow) if they become so widespread and dense that reduce the ability of desert tortoises to forage over wide areas. This threat is most prominent in the action area where fires have the potential to alter habitat conditions on a large scale.

As we discussed in the Status of Critical Habitat of the Desert Tortoise in the Action Area section of this biological opinion, the function and value of the second primary constituent element (sufficient quality and quantity of forage species and the proper soil conditions to provide for the growth of these species) has been compromised to some degree throughout the range of the desert tortoise. The Navy's activities, particularly near targets where fires are more likely, may exacerbate this threat.
The spread of non-native plant species is not likely to affect the third and fourth primary constituent element (suitable substrates for burrowing, nesting, and overwintering; burrows, caliche caves, and other shelter sites). We have reached this conclusion because the plants would not generally affect substrates or shelter sites used by desert tortoises.

Non-native plant species can degrade vegetation that shelter desert tortoises use to seek shelter from temperature extremes and predators (the fifth primary constituent element), primarily by supporting larger and more intense fires. Most shrubs in the California desert are not adapted to fire. Once fire kills these shrubs, they are unlikely to return, thus depriving desert tortoises of shelter sites.

Habitat that is degraded by the presence of a large component of non-native species has not been protected from disturbance and human-caused mortality (the sixth primary constituent element). Consequently, spread of non-native plant species has the potential to further degrade the value and function of this primary constituent element.

The Navy's fire management measures (primarily the removal of excessive vegetation, which would likely consist primarily of non-native annual plants, around targets) has some potential to reduce the spread of non-native plant species. The success of this measure would depend greatly on the timing and method of removal. For example, removing the non-native grasses before they set seed would greatly reduce the ability of the plants to spread. Conversely, removing the grasses after seed has set would increase the likelihood that these plants would spread as wind and vehicles could disperse seeds widely from the target areas.

Common Ravens

Desert Tortoise

The Navy has proposed to manage its trash and debris to reduce the attractiveness of Naval Air Weapons Station to common ravens. This protective measure would likely be effective in reducing some level of food subsidies to common ravens. We expect that buildings and other structures on the Naval Air Weapons Station would continue to provide common ravens with more perching, roosting, and nesting sites than would be found in a natural setting. We also expect that common ravens also derive at least some food and water from the residential area of the installation. The increase in operational tempo may lead to an increase in the number of people using the residential area, which may, in turn, increase the amount of food and water available to common ravens. Any increase in the number of common ravens would likely result in increased predation of desert tortoises.

Critical Habitat

Common ravens do not affect the primary constituent element of critical habitat.

Moving Desert Tortoises from Harm's Way

Desert Tortoise

Some potential exists that capturing desert tortoises to move them from harm's way may cause elevated levels of stress that may render these animals more susceptible to disease. Because the Navy will use experienced biologists approved by the Service (or other Navy staff trained to handle desert tortoises) and approved handling techniques, collected desert tortoises are unlikely to experience elevated stress levels. Information from a translocation project at Fort Irwin indicates that translocation of desert tortoises in that study did not cause a measurable physiological stress response (Averill-Murray 2011). In the case of Fort Irwin, the animals were often moved far from their home ranges. Because the Navy's activities are of a smaller scale, desert tortoises moved from harm's way would likely remain within their home ranges; therefore, we expect that the potential for these animals to be stressed is even lower. Additionally, even if desert tortoises that are moved from harm's way undergo some level of stress, that effect would be temporary and less stressful than being killed.

Critical Habitat

Moving desert tortoises from harm's way will not affect critical habitat. Neither the desert tortoises themselves nor the workers who transport them will affect the primary constituent elements of critical habitat. If the workers construct artificial burrows, they will disturb limited areas where annual plants could grow and their supporting substrates; however, this disturbance will not measurably affect the primary constituent elements of critical habitat.

Personnel on Foot

Desert Tortoise

Because of their small size, hatchlings and slightly larger desert tortoises could be trampled by foot traffic. Nests are also vulnerable, but their typical location, near the mouth of a burrow, likely protects them to some degree.

We expect that few desert tortoises would be injured or killed in this manner because most Navy personnel working in desert tortoise habitat will receive specific training, which would increase their awareness of this potential threat. Additionally, the likelihood of stepping on desert tortoises is generally low because they are widely distributed and uncommon.

Critical Habitat

This activity will not affect the primary constituent elements of critical habitat because of the general low level and intensity of use.

Habitat Conversion

The Navy and Service listed habitat conversion as an aspect of its activities that may affect desert tortoises and their habitat (including critical habitat). After analyzing these aspects to this point in the biological opinion and in consideration of our discussion of future development, we have determined that the remainder of the Effects of the Action section of this biological opinion adequately discusses this issue. Consequently, we will not provide a specific analysis for this aspect of the Navy's activities.

Future Development

Desert Tortoise

Future development would likely include disturbance of habitat within habitat occupied by desert tortoises. Because the Navy's clients must conduct some activities with limited notice to the environmental staff at the Naval Air Weapons Station, biologists may conduct surveys for desert tortoise during months when desert tortoises are inactive; such surveys are highly unlikely to find all of the desert tortoises within the project area. If desert tortoises are not detected prior to ground-disturbing activities, they are more likely to be killed or injured. Conversely, many desert tortoises are killed by vehicles on roads; when activities are conducted while desert tortoises are spending most of their time in burrows, they are less likely to be at risk from vehicles.

Over the next 25 years, the Navy estimates that the operation of the Naval Air Weapons Station could result in the mortality of up to four desert tortoises per year. We do not know how many desert tortoises may occur in any given area where the Navy conducts activities, whether those desert tortoises will be active at the time of the activity (depending on the nature of the activity, active animals are more or less vulnerable than those that remain in their burrows), and the precise number of animals that would be detected and moved from harm's way (rather than being injured or killed) during the conduct of any activity, we cannot predict how many desert tortoises are likely to be injured or killed over the next 25 years. Additionally, the risk to desert tortoises would change as their numbers increase or decrease; we cannot predict this trend for the next 25 years. Because the Navy would re-initiate formal consultation if four desert tortoises are killed or injured in any given year, the Service will be able to reassess the level of mortality in relation to the number of desert tortoises on the Naval Air Weapons Station and within the Western Mojave Recovery Unit through subsequent biological opinions. Therefore, these future consultations would ensure that the level of mortality that may result from the Navy's activities does not exacerbate the overall threat to the viability of the species in the Western Mojave Recovery Unit.

For the aforementioned reasons, we will base our analysis regarding the intensity of the Navy's activities with respect to desert tortoises on the estimate that up to four desert tortoises are likely

to be killed each year. (We will not discuss injury in this section; we will assume that any injured desert tortoises that are found will be treated. If they recover from their injuries to the extent that they can be released to the wild, these animals would not be included in the annual count of dead desert tortoises.) The Navy has never recorded more than two dead desert tortoises per year; given this fact and the proposed increase in the tempo of operations, we consider four desert tortoise mortalities per year to be a reasonable estimate. We also note that the Navy is unlikely to find every desert tortoise that dies as a result of its activities.

Because the Navy's activities would occur over a large area, a reasonable conclusion is that desert tortoises killed by those activities would occur over a large area. In areas of extremely low densities, even a few mortalities could substantially reduce the likelihood that desert tortoises would persist over the long term, as reproduction would decline if they cannot find mates. The effects of reproduction would decrease in areas with more desert tortoises, although the Naval Air Weapons Station does not support any areas with densities comparable to those found prior to its listing.

The Navy anticipates that 1,250 acres outside of critical habitat may be needed for the development of new facilities, infrastructure, and new or expanded targets. As previously discussed in this biological opinion, different surveyors estimated the amount of desert tortoise habitat on the Naval Air Weapons Station area at 354 to 1,173 square miles. For the sake of this analysis, we will assume that the entire installation supports 354 square miles of desert tortoise habitat and that the entire area of critical habitat within the installation is suitable habitat for desert tortoises. Therefore, approximately 214 square miles of desert tortoise habitat occur within the Naval Air Weapons Station outside of critical habitat. (That is, 354 square miles base-wide minus 89,310 acres of critical habitat divided by 640 equals 140 square miles; 354 – 140 = 214.)

Consequently, the 1.9 square miles (1,250 acres divided by 640 equals 1.9 square miles) that the Navy anticipates may be developed over the next 25 years comprises approximately 0.89 percent of the available habitat on the Naval Air Weapons Station. This development would be scattered in numerous locations through desert tortoise habitat. We expect that this loss of habitat is not likely to affect the distribution of the desert tortoise in a measurable manner.

Critical Habitat

The Navy anticipates that up to 150 acres may be needed for the development of new facilities, infrastructure, and new or expanded targets within the boundaries of critical habitat. This acreage comprises approximately 0.17 percent of the critical habitat on the Naval Air Weapons Station and 0.02 percent of the Superior-Cronese Critical Habitat Unit. (That is, 150 acres of development divided by 89,310 acres of critical habitat on the Naval Air Weapons Station times 100 equals 0.17 percent; 150 acres of development divided by 766,900 acres of critical habitat within the Superior-Cronese Critical Habitat Unit times 100 equals 0.02 percent.)

As we discussed in the previous section, the 150 acres of development would likely be scattered throughout critical habitat. We have previously discussed how the various aspects of the Navy's activities would affect the primary constituent elements of critical habitat, so we will not repeat those analyses here. Given, however, that the first primary constituent element (sufficient space to support viable populations within each of the six recovery units and to provide for movement, dispersal, and gene flow) specifically addresses the spatial aspects of critical habitat, we will discuss the navy's estimate in this context.

The loss or disturbance of relatively small amount of critical habitat over the next 25 years of operations, even when considered in combination with the approximately 1,100 acres that have burned to date, would not measurably impair the value and function of this primary constituent element. This loss or disturbance would increase the patchiness of suitable habitat because it would occur in numerous locations throughout critical habitat but it would occupy a very small area.

Effects on Recovery

The North Range is located in an area that the Service does not consider important to the long-term conservation of the desert tortoise, either as a key area to maintain a population of desert tortoises or as a linkage between such areas. The southern portion of the South Range lies within the Superior-Cronese Critical Habitat Unit. Because the Navy has traditionally focused most of its activities in the North Range and has proposed to limit its activities to a degree within critical habitat, implementation of the proposed action will not measurably affect the recovery of the desert tortoise.

Summary of the Effects of the Proposed Action on the Desert Tortoise and its Critical Habitat

Desert Tortoise

The regulatory definition of "to jeopardize the continued existence of the species" focuses on how the proposed action would affect the reproduction, numbers, or distribution of the species being considered in the biological opinion. For that reason, we have used those aspects of the desert tortoise's status as the basis to assess the overall effect of the proposed action on the species.

The mortality of four desert tortoises per year over the 25-year life of the withdrawal may negatively affect the amount of reproduction that can occur within the Naval Air Weapons Station, primarily because the loss of even a small number of individuals in a low-density population renders finding mates even more difficult. Within the context of desert tortoises across the Western Mojave Recovery Unit, these effects on reproduction would not be

measurable, primarily because the desert tortoises within the Naval Air Weapons Station comprise a relatively small proportion of the overall population in this recovery unit.

In its report on the results of range-wide sampling for 2010, the Service (2010b, 2010c) estimated that 8,301 larger desert tortoises (i.e., those greater than 180 millimeters in length) occupied the Superior-Cronese Desert Wildlife Management Area. Because of the sampling method, this number does not include desert tortoises smaller than 180 millimeters; consequently, the desert wildlife management area supports more than 8,301 desert tortoises. Additionally, the Western Mojave Recovery Unit covers a larger area than the Superior-Cronese Desert Wildlife Management Area; this larger area would include even more desert tortoises. Consequently, the loss of four desert tortoises per year that would trigger re-initiation of formal consultation comprises a minute portion of the overall number of desert tortoises in the Western Mojave Recovery Unit.

We cannot predict how the overall number of desert tortoises in the Western Mojave Recovery Unit may change over the next 25 years. If the overall number of desert tortoises in the recovery unit decreases, we expect that the number of desert tortoises that inhabit the Naval Air Weapons Station would also decrease; in that case, the likelihood that individuals would be encountered and killed during any given action by the Navy would also decrease. If the number of desert tortoises within the boundaries of the Naval Air Weapons Station increased, the re-initiation trigger would remain constant at four individuals per year. In the first case, the overall loss of desert tortoises in the Western Mojave Recovery Unit would remain at a constant small portion of the population; in the latter case, the portion of the population that would be lost would continue to shrink as the overall number of desert tortoises increased. In either case, the mortality of four desert tortoises per year as a result of the Navy's activities at the Naval Air Weapons Station would not comprise an appreciable reduction in the number of desert tortoises in the Western Mojave Recovery Unit.

The long-term disturbance of 1,400 acres associated with the proposed action would not appreciably reduce the distribution of the desert tortoise. Based on the Nussear et al. (2009) model and our calculations (Waln 2010), the Western Mojave Recovery Unit may support as much as 10,316 square miles of desert tortoise habitat. Consequently, the proposed action would result in the loss of approximately 0.02 percent of the habitat in the Western Mojave Recovery Unit; the disturbed lands would be scattered in numerous parcels across the Naval Air Weapons Station.

Critical Habitat

The proposed action will not reduce the conservation role and function of critical habitat because most of the disturbance proposed by the Navy would occur outside of the boundaries of critical habitat. The Navy has proposed to disturb only approximately 0.02 percent of the Superior-Cronese Critical Habitat Unit. The Navy's proposal to adaptively manage fire around target sites

is likely to reduce the level of effects of its actions within critical habitat.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. Because the action area is entirely located on Federal lands, all future actions will be subject to the consultation requirements of section 7(a)(2) of the Act. Consequently, the proposed action has no associated cumulative effects.

CONCLUSION

Desert Tortoise

After reviewing its current status, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is our biological opinion that the proposed action is not likely to jeopardize the continued existence of the desert tortoise. We have reached this conclusion, in part, because the Navy has proposed measures to reduce the number of desert tortoises that are likely to be injured or killed by its proposed action. Additionally, most of the habitat within the Naval Air Weapons Station supports low densities of desert tortoises and the Navy's activities will likely disturb a small portion of occupied habitat within the installation.

The analysis we conduct under section 7(a)(2) of the Endangered Species Act must be conducted in relation to the status of the entire listed taxon. We based the analysis in this biological opinion within the context of the Western Mojave Recovery Unit because of the wide range of the desert tortoise. Because we have determined that the effects of this action would not compromise the integrity of the Western Mojave Recovery Unit or impede the survival or recovery of the desert tortoise in an appreciable manner in this portion of its range, we have not extended the analysis of the effects of this proposed action to the remainder of the range of the Mojave population of the desert tortoise.

Critical Habitat

After reviewing the current status of critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is our biological opinion that the proposed action is not likely to result in the destruction or adverse modification of critical habitat of the desert tortoise. We have reached this conclusion because the amount of critical habitat that is likely to be affected comprises a small portion of the total amount of the critical habitat on the Naval Air Weapons Station, which itself is a portion of the larger Superior-

Cronese Critical Habitat Unit. The amount of disturbance is not likely to compromise the conservation function and value of critical habitat for the desert tortoise.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened wildlife species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the protective measures proposed by the Navy and the terms and conditions of this incidental take statement.

The measures described below are non-discretionary. The Navy must undertake these measures or make them binding conditions of any grant or permit issued to its customers, as appropriate, for the exemption in section 7(o)(2) to apply. The Navy has a continuing duty to regulate the activity covered by this incidental take statement. If the Navy fails to assume and implement the terms and conditions of the incidental take statement or to make them binding conditions of its customers' grants or permits, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Navy must report the progress of the action and its impact on the desert tortoise to the Service as specified in the incidental take statement. [50 CFR 402.14(i)(3)]

We estimate that four desert tortoises per year are likely to be taken, in the form of mortality, as a result of the proposed operation of the Naval Air Weapons Station. This number is based on the estimate provided by the Navy in its biological assessment (Navy 2012); we used this estimate as the basis of our section 7(a)(2) analysis in this biological opinion. Based on the 25-year life of the withdrawal, we anticipate that 100 desert tortoises are likely to be killed.

Because we do not expect that removing desert tortoises from harm's way is likely to result in injury or mortality of desert tortoises, we are not anticipating the amount or extent of this form of take.

REASONABLE AND PRUDENT MEASURES AND TERMS AND CONDITIONS

The Navy and Service agreed to several revisions to the proposed action during the course of formal consultation. Because these revisions have been incorporated into the proposed action of this biological opinion, we have no additional reasonable and prudent measures or terms and conditions.

As described at the beginning of this section, the protective coverage of section 7(o)(2) may lapse if the Navy does not abide by the protective measures described in this biological opinion. Additionally, the Navy remains responsible for complying with the provisions of Reporting Requirements and Disposition of Dead or Injured Specimens sections of this biological opinion.

REPORTING REQUIREMENTS

Pursuant to 50 Code of Federal Regulations 402.14(i)(3), the Navy must provide a report to the Service that provides details on each desert tortoise that is killed or injured by its activities. Specifically, the report must include information on any instances when desert tortoises were killed, injured, or handled, the circumstances of such incidents, and any actions undertaken to prevent similar instances from re-occurring. The report must also include a description of the monitoring efforts that occurred during implementation of its proposed action. We recommend that the Navy provide this report by January 31 of each year this biological opinion is in effect; however, the Navy may suggest an alternative date for reporting, if it so desires.

DISPOSITION OF DEAD OR INJURED SPECIMENS

Within 3 days of locating any dead or injured desert tortoises, you must notify the Ventura Fish and Wildlife Office by telephone (805 644-1766) and by facsimile (805 644-3958) or electronic mail. The report must include the date, time, and location of the carcass, a photograph, cause of death, if known, and any other pertinent information.

The Navy must take injured desert tortoises to a qualified veterinarian for treatment. If any injured desert tortoises survive, the Navy must contact the Service regarding their final disposition.

The Navy must take care in handling dead specimens to preserve biological material in the best possible state for later analysis, if such analysis is needed. The Service will make this determination when the Navy provides notice that a desert tortoise has been killed by project activities.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes

of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. We recommend that the Navy conduct focused surveys in the riparian portion of the North Range, to assess the status of willow flycatchers and Bell's vireos in the action area.

2. We recommend that the Navy conduct surveys of desert tortoise critical habitat in the action area, to more accurately assess the status of desert tortoise in the area. This information can function as new baseline data and may facilitate more effective management practices.

3. We recommend that the Navy participate in recovery actions for the desert tortoise that are intended to increase the number of animals and secure its habitat, both within and outside the boundaries of the Naval Air Weapons Station. Such programs could include assisting the Service in implementation of the management plan for the common raven, control of feral dogs, management of subsidies for coyotes, and numerous other activities that are intended to reduce the mortality levels of desert tortoises and improve habitat conditions.

The Service requests notification of the implementation of any conservation recommendations so we may be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats.

RE-INITIATION NOTICE

This concludes formal consultation on the actions outlined in the proposed renewal of the Navy's public land withdrawal of the Naval Air Weapons Station. Re-initiation of formal consultation is required where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) if the amount or extent of taking specified in the incidental take statement is exceeded; (b) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (c) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or (d) if a new species is listed or critical habitat designated that may be affected by the identified action (50 Code of Federal Regulations 402.16).

In instances where the amount or extent of incidental take is exceeded, the exemption issued pursuant to section 7(o)(2) will have lapsed and any further take would be a violation of section 4(d) or 9. Consequently, we recommend that any operations causing such take cease pending re-initiation.

Sincerely,

Diane K. Noda

Diane K. Noda
Field Supervisor

Appendices

1 - Mojave population of the desert tortoise (*Gopherus agassizii*). 5-year review: summary and evaluation. Available on disk or hard copy by request or at http://ecos.fws.gov/docs/five_year_review/doc3572.DT%205Year%20Review_FINAL.pdf.

2 - Map illustrating the 12 critical habitat units of the desert tortoise and the aggregate stress that multiple threats place on critical habitat.

3 - Map depicting the extent of the threat of invasive plants

References Cited

Averill-Murray, R. 2011. Electronic mail. Summary of Fort Irwin translocation research results to date – taken from 2010 recovery permit reports. Dated April 29. Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service. Reno, Nevada.

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 tortoises (*Gopherus agassizii*). Sea World Research Institute, Hubbs Marine Research Center. San Diego, California.

Burroughs, M. 2012. Electronic mail. Information on solar projects in desert tortoise habitat in Nevada for which the Fish and Wildlife Service has issued biological opinions. Dated April 26. Fish and Wildlife Biologist, Southern Nevada Field Office. Las Vegas, Nevada.

Campbell, T. 2012. Telephone conversation. Project description and potential effects of the proposed action. Dated October 3. Environmental Protection Specialist, NAVFAC Southwest. China Lake, California.

Campbell, T. 2013. Electronic mail. Comments on draft biological opinion. Dated January 23. NAVFAC Southwest. China Lake, California.

Department of the Navy. 1996-2011. Annual Reports: Desert Tortoise Management Plan for Naval Air Weapons Station, China Lake, California. Submitted to Ventura Fish and Wildlife Office, Ventura, California. China Lake, California.

Department of the Navy. 2012. Biological assessment for the renewal of the Naval Air Weapons Station China Lake land withdrawal. Dated May 24. Naval Air Weapons Station. China Lake, California.

Drake, K.K., T.C. Esque, K.E. Nussear, C. Aiello, P. Emblidge, P.A. Medica. 2010. An annual report for desert tortoise translocation research at the Fort Irwin Southern Expansion Translocation Area. Prepared for the U.S. Army National Training Center, Natural Resource Program Manager.

Esque, T.C., K.E. Nussear, K.K. Drake, A.D. Walde, K.H. Berry, R.C. Averill-Murray, A.P. Woodman, W.I. Boarman, P.A. Medica, J. Mack, J.S. Heaton. 2010. Effects of subsidized predators, resource variability, and human population density on desert tortoise populations in the Mojave Desert, USA. Endangered Species Research (12) 167-177.

Ironwood Consulting. 2011. Biological resources technical report – Stateline Solar Farm project, San Bernardino, County, California. .

Kiva Biological Consulting. 1991. Estimated Distribution of the Density of the Desert Tortoise at China Lake, Naval Weapons Center. Inyokern, California.

Kiva Biological Consulting and Epsilon Systems Solutions, Inc. 2005. Naval Air Weapons Station/China Lake Desert Tortoise Survey Technical Report. Inyokern, California.

McLuckie, A.M., P.G. Emblidge, and R.A. Fridell. 2010. Regional desert tortoise monitoring in the Red Cliiffs Desert Reserve, 2009. Publication Number 10-13. Utah Division of Wildlife Resources. Salt Lake City, Utah.

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.

Tracy, C.R., R. Averill-Murray, W.I. Boarman, D. Delehanty, J. Heaton, E. McCoy, D. Morafka, K. Nussear, B. Hagerty, and P. Medica. 2004. Desert Tortoise Recovery Plan Assessment. Prepared for the U.S. Fish and Wildlife Service. Reno, Nevada.

U.S. Bureau of Land Management, County of San Bernardino, City of Barstow. 2005. Final environmental impact report and statement for the West Mojave Plan; a habitat conservation plan and California Desert Conservation Area Plan amendment. California Desert District, Moreno Valley, California.

U.S. Fish and Wildlife Service. 1991. Biological opinion on the Johnson Valley Off-highway Vehicle Area Management Plan, San Bernardino County, California (1-6-90-F-39). Memorandum to State Director, Bureau of Land Management, Sacramento, California. Dated November 14. From Field Supervisor, Southern California Field Station, Laguna Niguel, California.

U.S. Fish and Wildlife Service. 1993. Draft desert tortoise (Mojave population) recovery plan. Portland, Oregon.

U.S. Fish and Wildlife Service. 1994. Desert tortoise (Mojave population) recovery plan. Portland, Oregon.

U.S. Fish and Wildlife Service. 2004. Biological opinion for the proposed addition of maneuver training lands at Fort Irwin, California (1-8-03-F-48). Letter to Colonel Edward Flynn, Fort Irwin, California. Dated March 15. From Field Supervisor, Ventura Fish and Wildlife Office. Ventura, California.

U.S. Fish and Wildlife Service. 2008a. Biological opinion for a Right-of-Way Grant for the Coso Hay Ranch Pipeline, Inyo County, California (8-8-10-F-34). Memorandum to Field Manager, Ridgecrest Field Office, Bureau of Land Management, Ridgecrest, California. Dated December 17. From Assistant Field Supervisor, Ventura Fish and Wildlife Office, Ventura, California.

U.S. Fish and Wildlife Service. 2008b. Environmental assessment to implement a desert tortoise recovery plan task: reduce common raven predation on the desert tortoise. Ventura Fish and Wildlife Office, Ventura, California.

U.S. Fish and Wildlife Service. 2009. Range-wide monitoring of the Mojave population of the desert tortoise: 2007 annual report. Desert Tortoise Recovery Office. Reno, Nevada.

U.S. Fish and Wildlife Service. 2010a. Mojave population of the desert tortoise (*Gopherus agassizii*) 5-year review: summary and evaluation. Desert Tortoise Recovery Office, Reno, Nevada.

U.S. Fish and Wildlife Service. 2010b. Range-wide monitoring of the Mojave population of the desert tortoise: 2010 annual report. Desert Tortoise Recovery Office. Reno, Nevada.

U.S. Fish and Wildlife Service. 2010c. Range-wide monitoring of the Mojave population of the desert tortoise: 2008 and 2009 annual report. Desert Tortoise Recovery Office. Reno, Nevada.

U.S. Fish and Wildlife Service. 2010d. Biological opinion for the Lucerne Valley Chevron Solar Project, San Bernardino County, California (8-8-10-F-6). Memorandum to Field Manager, Barstow Field Office, Bureau of Land Management, Barstow, California. Dated June 10. From Field Supervisor, Ventura Fish and Wildlife Office, Ventura, California.

U.S. Fish and Wildlife Service. 2010e. Biological opinion on Tessera Solar's Calico solar power generating facility, San Bernardino, California (8-8-10-F-34). Memorandum to Field Manager, Barstow Field Office, Bureau of Land Management, Barstow, California. Dated October 15. From Field Supervisor, Ventura Fish and Wildlife Office, Ventura, California.

U.S. Fish and Wildlife Service. 2010f. Section 7 biological opinion on the Genesis Solar Energy Project, Riverside County, California. Memorandum to Field Manager, Palm Springs South Coast Field Office, Bureau of Land Management, Palm Springs, California. Dated November 2. From Field Supervisor, Carlsbad Fish and Wildlife Office, Carlsbad, California.

U.S. Fish and Wildlife Service. 2010g. Section 7 biological opinion on the Blythe Solar Power Plant, Riverside County, California. Memorandum to Field Manager, Palm Springs South Coast Field Office, Bureau of Land Management, Palm Springs, California. Dated October 8. From Field Supervisor, Carlsbad Fish and Wildlife Office, Carlsbad, California.

U.S. Fish and Wildlife Service. 2011a. Revised recovery plan for the Mojave population of the desert tortoise (*Gopherus agassizii*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. 222pp.

U.S. Fish and Wildlife Service. 2011b. Biological opinion on BrightSource Energy's Ivanpah Solar Electric Generating System project, San Bernardino County, California (8-8-10-F-24R). Memorandum to District Manager, California Desert District, Bureau of Land Management, Moreno Valley, California. Dated June 10. From Field Supervisor, Ventura Fish and Wildlife Office, Ventura, California.

U.S. Fish and Wildlife Service. 2011c. Biological opinion on the Desert Sunlight Solar Farm Project, Riverside County, California. Memorandum to Field Manager, Palm Springs South Coast Field Office, Bureau of Land Management, Palm Springs, California. Dated July 6. From Field Supervisor, Carlsbad Fish and Wildlife Office, Carlsbad, California.

U.S. Fish and Wildlife Service. 2011d. Biological opinion on Mojave Solar, LLC's Mojave Solar Project, San Bernardino County, California (8-8-11-F-3). Letter sent to Director of Environmental Compliance, Loan Guarantee Program, Department of Energy, Washington, D.C. and Field Manager, Barstow Field Office, Bureau of Land Management, Barstow, California. Dated March 17. From Field Supervisor, Ventura Fish and Wildlife Office, Ventura, California.

U.S. Fish and Wildlife Service. 2011e. Section 7 biological opinion on the Palen Solar Power Project, Riverside County, California. Memorandum to Field Manager, Palm Springs South Coast Field Office, Bureau of Land Management, Palm Springs, California. Dated June 2. From Field Supervisor, Carlsbad Fish and Wildlife Office, Carlsbad, California.

U.S. Fish and Wildlife Service. 2011f. Recovery data call report. Fiscal year 2011. https://ecos.fws.gov/tess/reports.

U.S. Fish and Wildlife Service. 2012a. Biological opinion for the proposed addition of maneuver training lands at Fort Irwin, California (8-8-11-F-38R). Letter to Chief of Staff, Headquarters, National Training Center and Fort Irwin, Fort Irwin, California. Dated April 27. From Field Supervisor, Ventura Fish and Wildlife Office. Ventura, California.

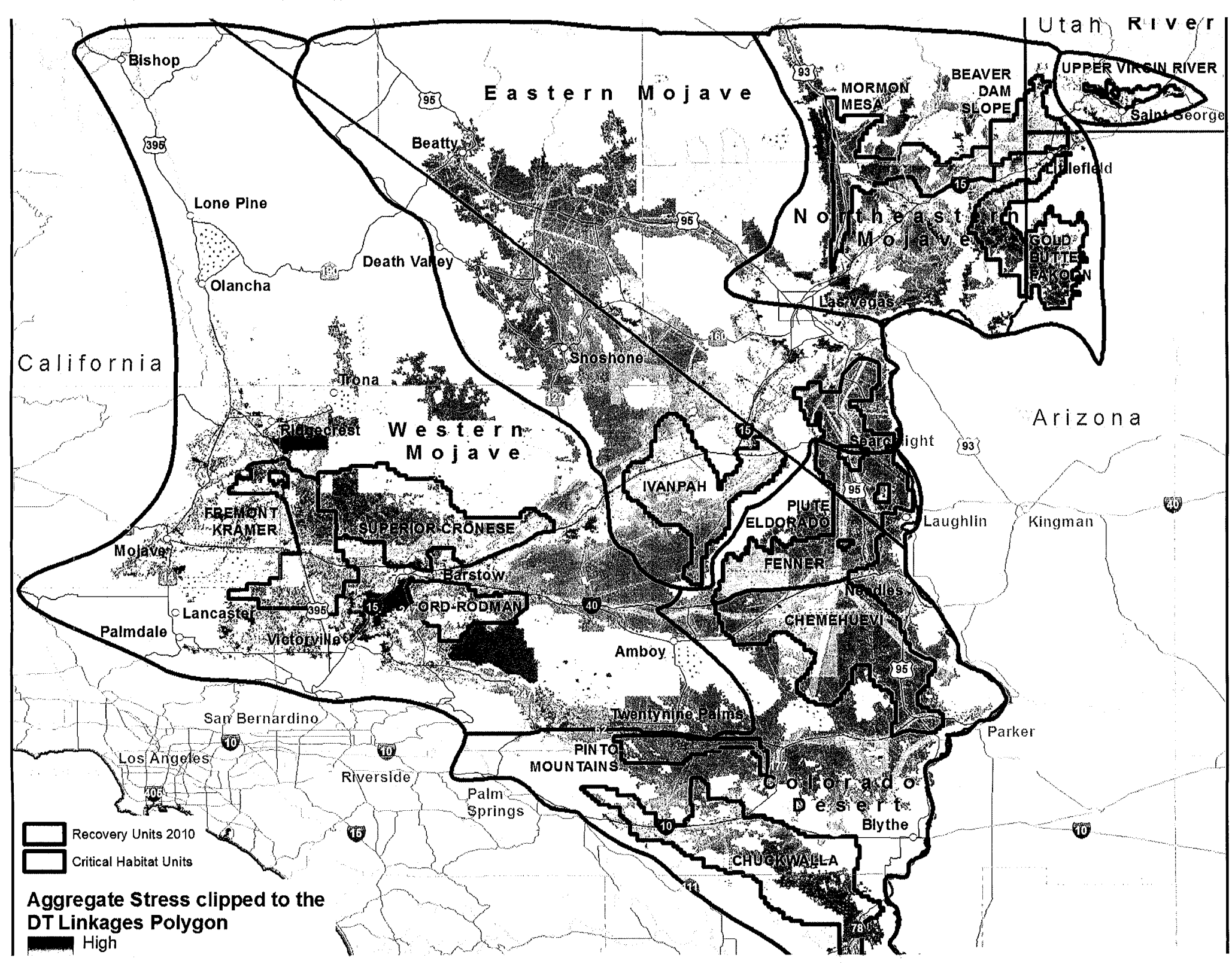
U.S. Fish and Wildlife Service. 2012b. Draft biological opinion for the Renewal of the Naval Air Weapons Station, China Lake Public lands Withdrawal, California (5090 Ser PR241/397) (8-8-12-F-29). Letter to Environmental Management Division, Naval Air Weapons Station, China Lake, California. Dated December 10. From Field Supervisor, Ventura Fish and Wildlife Office. Ventura, California.

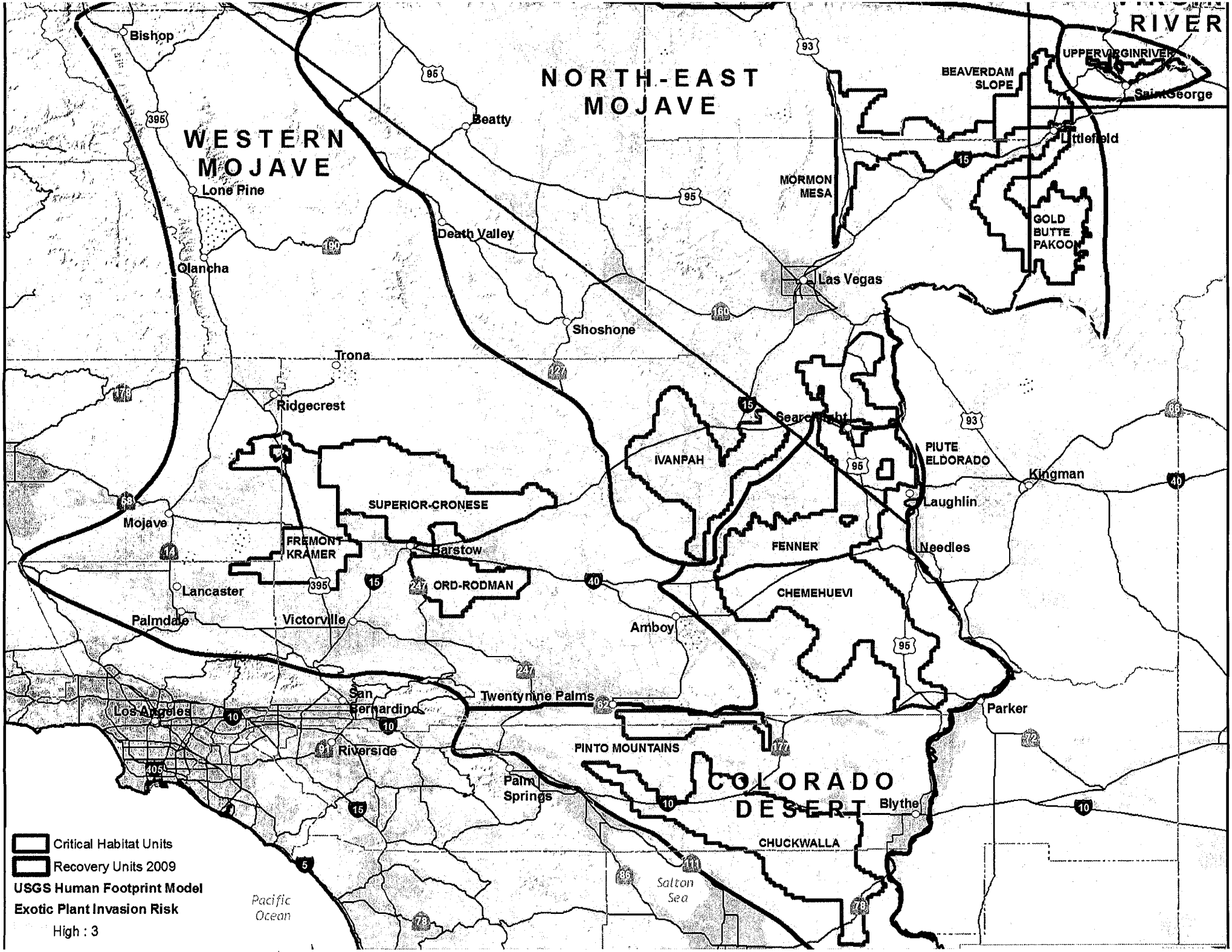
U.S. Fish and Wildlife Service. 2012c. Re-initiation of consultation for the Calico Solar Project, San Bernardino, California (FWS File #8-8-10-F-34) (CACA-049537, (3031) P, CA-680.33). Dated June 12. Memorandum to Deputy State Director, Bureau of Land Management, Sacramento, California. From Field Supervisor, Ventura Fish and Wildlife Office. Ventura, California.

U.S. Fish and Wildlife Service. 2012d. Biological opinion for land acquisition and airspace establishment to support large-scale Marine Air Ground Task Force live-fire and maneuver training, Twentynine Palms, California (8-8-11-F-65). Dated July 17. Letter to Commanding General, Marine Corps Air Ground Combat Center, Twentynine Palms, California. From Field Supervisor, Ventura Fish and Wildlife Office. Ventura, California.

Waln, K. 2010. GIS calculations: estimate of modeled desert tortoise habitat within the Western Mojave Recovery Unit from the 1994 recovery plan. Dated February 2. Ventura Fish and Wildlife Office. Ventura, California.

Xian, G., C. Homer, and J. Fry. 2009. Updating the 2001 National Landcover Database land cover classification to 2006 by using Landsat imagery change detection methods. Remote Sensing of Environment 113: 1133-1147.


Utah
River
Bishop
Eastern Mojave
MORMON MESA
BEAVER DAM SLOPE
UPPER VIRGIN RIVER
Saint George
Beatty
Lone Pine
Death Valley
Olancha
Northeastern Mojave
GOLD BUTTE
PAKOON
Las Vegas
California
Shoshone
Trona
Ridgecrest
Western Mojave
Arizona
Searchlight
IVANPAH
PIUTE
ELDORADO
Laughlin
Kingman
FREMONT KRAMER
SUPERIOR-CRONESE
Mojave
Barstow
FENNER
Needles
Lancaster
ORD-RODMAN
CHEMEHUEVI
Palmdale
Victorville
Amboy
San Bernardino
Twentynine Palms
Parker
Los Angeles
PINTO MOUNTAINS
Riverside
Palm Springs
Colorado Desert
Blythe
CHUCKWALLA
Recovery Units 2010
Critical Habitat Units
Aggregate Stress clipped to the DT Linkages Polygon
High


NORTH-EAST MOJAVE
WESTERN MOJAVE
COLORADO DESERT
Bishop
Lone Pine
Olancha
Beatty
Death Valley
Trona
Ridgecrest
Shoshone
Las Vegas
Searchlight
Littlefield
Saint George
BEAVERDAM SLOPE
MORMON MESA
GOLD BUTTE PAKOON
IVANPAH
PIUTE ELDORADO
Kingman
Laughlin
Needles
Parker
Blythe
SUPERIOR-CRONESE
FREMONT KRAMER
ORD-RODMAN
FENNER
CHEMEHUEVI
PINTO MOUNTAINS
CHUCKWALLA
Mojave
Barstow
Lancaster
Palmdale
Victorville
Amboy
Twentynine Palms
San Bernardino
Los Angeles
Riverside
Palm Springs
Salton Sea
Pacific Ocean
Critical Habitat Units
Recovery Units 2009
USGS Human Footprint Model
Exotic Plant Invasion Risk
High : 3

APPENDIX K

PROGRAMMATIC AGREEMENT

Programmatic Agreement
Among the U.S. Department of Navy, Naval Air Weapons Station China Lake,
The Advisory Council on Historic Preservation and
The California State Historic Preservation Officer
Regarding Implementation of Integrated Cultural Resources Management Plan at
Naval Air Weapons Station China Lake, California

Whereas, the Department of the Navy, Naval Air Weapons Station China Lake (NAWSCL), has determined that undertakings conducted at NAWSCL may affect properties included in, eligible and potentially eligible for inclusion in the National Register of Historic Places (historic properties), and has consulted with the Advisory Council on Historic Preservation (ACHP) and the California State Historic Preservation Officer (SHPO) in accordance with 36 CFR Part 800 (August 5, 2004), regulations implementing section 106 of the National Historic Preservation Act (NHPA) (16 U.S.C. 470f), to take the effects of the undertaking on historic properties into account and to afford the ACHP a reasonable opportunity to comment on the undertaking and its effects on historic properties; and

Whereas, NAWSCL, the ACHP and the SHPO have agreed pursuant to 36 CFR § 800.14(b), that NAWSCL compliance with section 106 for the undertaking will be evidenced by execution and implementation of this Programmatic Agreement (PA) and by implementation of the NAWSCL Integrated Cultural Resources Management Plan (ICRMP) to which this PA is included as Appendix L; and

Whereas, Federally recognized American Indian Tribes; Big Pine Paiute Tribe of Owens Valley; Bishop Paiute Shoshone Tribal Council; Fort Independence Paiute Tribe; Lone Pine Paiute Shoshone Reservation; Benton Paiute Tribal Council; Bridgeport Indian Reservation and Timbisha Shoshone Tribe who's people have traditionally inhabited or used the lands within NAWSCL have been given the opportunity to participate in development of the PA and the ICRMP, will continue to be provided the opportunity to participate in the implementation, review, and revision of the ICRMP and, as may be necessary, of the PA, and have been invited to become concurring parties to this PA; and

Whereas, Non Federally Recognized American Indian Tribes (Kern Valley Indian Community) who's peoples have traditionally inhabited or used the lands within NAWSCL have been given the opportunity to participate in development of the PA and the ICRMP, will continue to be provided the opportunity to participate in the implementation, review, and revision of the ICRMP and, as may be necessary, of the PA, and have been invited to become concurring parties to this PA; and

Whereas, the Commander, Navy Region Southwest has delegated the authority to the Installation Commanding Officer (ICO) of NAWSCL to enter into a NHPA Agreement with the ACHP and California SHPO:

Now Therefore, NAWSCL ICO, the ACHP, and the SHPO agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effects of the undertaking on historic properties, and that these stipulations shall govern the undertaking until this PA expires or is terminated.

Stipulations

To the extent of its legal authority, and in coordination with the ACHP and SHPO, NAWSCL ICO shall ensure that the following stipulations are carried out:

1.0 Applicability

This PA applies to all Navy Commands, DoD Departments, and private companies operating on lands managed by the NAWSCL ICO. It applies to all aspects of an undertaking carried out at NAWSCL except for any action that will result in an adverse effect to a historic property or a National Historic Landmark (NHL). The NAWSCL ICO shall follow 36 CFR § 800.6 instead of this PA for any action that will result in an adverse effect to historic property

or a NHL. This PA does not cover undertakings associated with government housing located at NAWSCL which are currently managed through an existing document entitled ***Programmatic Agreement Among the U.S. Department of the Navy, the California State Historic Preservation Officer, and San Diego Family Housing, LLC Regarding the Public-Private Venture for Family Housing, Naval Air Weapons Station, China Lake*** or activities located on Navy acquired fee lands located within the Coso Known Geothermal Resource Area (Coso KGRA) which are managed through and existing document entitled ***Programmatic Memorandum of Agreement Between the Commander, Naval Weapons Center, California State Historic Preservation Officer, Advisory Council on Historic Preservation.***

2.0 Integrated Cultural Resources Management Plan (ICRMP)

2.1 NAWSCL shall satisfy its responsibilities under sections 106 and 110 of the NHPA and under 36 CFR Part 800 by implementing this PA in accordance with the procedures defined in the NAWSCL ICRMP to which this PA is included as Appendix L.

2.2 Compliance with paragraph 2.1, above, of this stipulation shall preclude the need for NAWSCL consultation with SHPO and the ACHP on individual actions associated with Range testing or training activity for individual actions covered by this PA. However, neither this paragraph nor the PA as a whole shall apply to any Range activity conducted at NAWSCL that will adversely affect a historic property or National Historic Landmark

2.3 Compliance with Section 2.1 above of this shall require that NAWSCL submit all records related to undertakings involving facilities projects to the SHPO 6 months and 12 months after signature of this PA. After the first year NAWSCL may request that undertakings only be submitted once a year with the annual report. The ICRMP will be modified pending the outcome of the decision by the SHPO's Office.

2.4 NAWSCL shall consult SHPO and the ACHP pursuant to 36 CFR Part 800 when an individual action covered by this PA will adversely affect a historic property and the ICRMP does not prescribe measures that would avoid the adverse effect or reduce the effect to less than adverse.

2.5 At its discretion, NAWSCL may consult with SHPO and/or the ACHP pursuant to 36 CFR Part 800 for any individual action covered by this PA.

The ICRMP is intending to be a living document that may require amendments due to changes in existing Laws, Regulations, Policies and available information related to cultural resources located at NAWSCL Amendment of the ICRMP as set forth herein will not require amendment of this Agreement if all Signatories agree in writing. If the Signatories do not agree to the amendment of the ICRMP, the disagreement will be resolved pursuant to the procedures in Section 3.5 of this Agreement.

3.0 Administrative Provisions

3.1 Authority to Implement This PA and the ICRMP

3.1.1 The Commanding Officer, NAWSCL, has delegated the authority to implement this PA and the ICRMP to the Installation Environmental Program Director (IEPD). The IEPD is authorized to conduct any coordination and consultation with SHPO and the ACHP, concurring parties, Tribes, and other concerned agencies, organizations, and persons that may be required by this PA and the ICRMP.

3.1.2 Routine and regular implementation of actions conducted in accordance with the ICRMP has been delegated by the IEPD to the NAWSCL Cultural Resource Program Manager (CRPM).

3.2 Professional Qualifications Standards

3.2.1 The Cultural Resource Program Manager (CRPM) will be a government employee meeting the professional qualifications as defined in Section 27-3.8 of the Navy's Environmental Readiness Program Manual, OPNAVINST 5090.1C.

3.2.2 If the CRMP does not meet the Secretary of Interior's "Professional Qualifications Standards" (48 FR 44738-44739) in an applicable discipline/s he or she will consult with a Navy Qualified Professional meeting those standard/s; However, nothing in this stipulation shall preclude NAWSCL from hereunder using principal or permitted investigators under the supervision of the CRPM who meet the "Professional Qualification Standards."

3.2.3 Other Government employees authorized by the CRPM to implement routine and regular implementation of this ICRMP shall meet at a minimum the Secretary of Interior's "Professional Qualifications Standards" (48 CFR 44738-44739) in the appropriate discipline/s. This authorization shall be assigned to qualified person/s by the CRPM. However, nothing in this stipulation shall preclude NAWSCL from using principal or permitted investigators under the supervision of NAWCL IEPM or CRPM who meet the "Professional Qualification Standards."

3.3 Confidentiality

The parties to this PA acknowledge that certain cultural resources covered by this PA are subject to the provisions of § 304 of the NHPA relating to the disclosure of archaeological and sacred site information and, having so acknowledged, will ensure that all actions and documentation prescribed by this PA and the ICRMP are consistent with § 304 of the NHPA.

3.3.1 Disclosure of archaeological and/or sacred site information to designated individuals of the various commands performing work at NAWCL or cultural contractors may be necessary for reasons of resource protection or project planning purposes. Individuals or commands requesting access to such information shall be required to sign a non-disclosure statement and provide the IEPM and/or CRPM with documentation that will describe the methods in which the information will be used and kept secure, and name the individuals with approved access. This information will be updated on an annual basis and maintained by the CRPM.

3.4 Annual Review and Reporting

3.4.1 NAWSCL will prepare an *"Annual NAWSCL Historical Buildings, Facility and Archaeological Compliance Report"* (Annual Report) to document implementation of the ICRMP for each federal fiscal year that this PA is in effect. In addition, NAWSCL will prepare an annual update of the ICRMP. Both documents will be submitted concurrently for review and comment to SHPO, the ACHP, concurring parties, Tribes and other interested parties by December 1 of the calendar following the federal fiscal year covered in the Annual Report. The Annual Report shall include a complete summary of all actions pertaining to Sections 2.2 and 2.3 of this PA and any ICRMP amendments. The OHP will also receive any documentation, monitoring reports, etc. related to undertakings that had a No Effect and No Adverse Effect in which they have not received previously. Tribes will receive report and monitoring documentation related to undertakings per existing agreements. The annual update of the ICRMP will include a summary of changes, deletions, or additions that may have occurred during the reporting year (See Section 2.6) and a status report of implementation of planned actions as stated in the ICRMP.

3.4.2 Reviewing parties shall have 45 days following receipt of the Annual Report and annual ICRMP update to provide NAWSCL with written comments. NAWSCL will consider any timely comments received within the 45 period days and will provide the commenter and all other reviewing parties with its response to the comments. NAWSCL may finalize the report absent of any comments. Disputes that may arise hereunder shall be addressed pursuant to Section 3.5 of this document.

3.4.3 Individual reports documenting undertakings will be forwarded to the SHPO as attachments to the Annual Report and to the Tribes in accordance with NAWSCL ICO endorsed agreements.

3.5 Resolving Objections

3.5.1 Should any signatory object in writing to NAWSCL regarding the manner in which the terms of this PA are carried out, NAWSCL will immediately notify the other signatories of the objection and proceed to consult with the objecting signatory to resolve the objection. NAWSCL shall honor the request of any other signatory to participate in the consultation and will take any comments provided by such signatories into account. NAWSCL will establish a reasonable time frame for such consultation.

3.5.2 If the objection is resolved through consultation, NAWSCL may proceed with the action subject to objection in accordance with the terms of such resolution.

3.5.3 If after initiating such consultation NAWSCL determines that the objection cannot be resolved through consultation, it shall forward all documentation relevant to the objection to the ACHP, including NAWSCL's proposed response to the objection. Within 30 days after receipt of all pertinent documentation, the ACHP shall exercise one of the following options:

3.5.3.1 Advise NAWSCL that the ACHP concurs in NAWSCL proposed response to the objection, whereupon NAWSCL will respond to the objection accordingly; or

3.5.3.2 Provide NAWSCL with recommendations, which NAWSCL shall take into account in reaching a final decision regarding its response to the objection; or

3.5.3.3 Notify NAWSCL that the objection will be referred for comment pursuant to 36 CFR 800.7(a) (4) and proceed to refer the objection and comment. In this event, NAWSCL shall ensure that the NAWSCL ICO is prepared to take the resulting comment into account in accordance with 36 CFR 800.7(c) (4).

3.5.3.4 Should the ACHP not exercise one of the above options within 30 days after receipt of the pertinent documentation; NAWSCL may assume the ACHP's concurrence in its proposed response to the objection.

3.5.3.5 NAWSCL shall take into account any ACHP recommendation or comment received from other signatories to this PA in reaching a final decision regarding the objection. NAWSCL's responsibility to carry out all actions under this PA that are not the subject of an objection shall remain unchanged.

3.5.3.6 NAWSCL shall provide all other signatories to this PA with a written copy of its final decision regarding any objection addressed pursuant to this stipulation.

3.5.3.7 NAWSCL may authorize any action subject to objection under items 1-6, inclusive of this stipulation to proceed, provided the objection has been resolved in accordance with the terms of items 1-6, inclusive of this stipulation.

3.6 Public Objections

3.6.1 Should a member of the public object to the manner in which the terms of this PA or the ICRMP are implemented, NAWSCL shall immediately notify the other signatories in writing of the objection and shall engage with the objecting party, and with any signatory who wishes to participate in the discussion, to review and consider the objection. NAWSCL shall establish a reasonable time frame for completing this review. If the objection is resolved within this time frame, NAWSCL shall notify all signatories in writing of the resolution, and thereafter may proceed with its action in accordance with the terms of that resolution. If the objection is not resolved within this time frame, NAWSCL shall render a decision regarding the objection within 14 days after the discussion period expires and provide the objecting party and all other signatories with written notification of its decision. In reaching its decision, NAWSCL will take all comments from the participating parties into consideration. NAWSCL's decision regarding the objection will be final. Following issuance of its final decision, NAWSCL may authorize the action subject to objection hereunder to proceed in accordance with the terms of that decision.

3.7 Amendments

3.7.1 Any signatory may at any time propose amendment of this PA whereupon all signatories shall consult to consider such amendment. This PA may be amended only upon written concurrence of all signatory parties.

3.7.2 If after 45 days the Signatories fail to agree on an amendment the Signatories may elect to seek non-binding resolution through the facilitation of a mutually agreed upon neutral party (the facilitator). Each Signatory shall provide a brief to the facilitator outlining their positions and proposing modifications. The facilitator shall provide a written Resolution Proposal to the disputing parties within 30 days. The Resolution Proposal is non-

binding and may be rejected by any of the Signatories in writing to the other signatories of this PA. In the event of a failure to reach an agreeable amendment, the NAWSCL ICO will make the final agency decision considering the best interests of the resource and the Navy mission. Written notification of that final decision shall be provided to all signatories within 14 days of its rendering.

3.8 Termination

3.8.1 Only a signatory party may terminate this PA. If this PA is not amended as provided for in Section 3.7 to address the concerns of the signatory, the signatory party proposing termination shall notify all other signatories in writing, explain the reasons for proposing termination, and consult with the other signatories for no more than 30 days to seek alternatives to termination. Should such consultation result in an agreement on an alternative to termination, then the signatories shall proceed in accordance with the terms of that agreement.

3.8.2 Should such consultation fail, the signatory party proposing termination may terminate this PA by promptly notifying the other signatories in writing.

3.8.3 Should this PA be terminated, then NAWSCL shall consult in accordance with 36 CFR 800.14(b) to develop a new PA. Beginning with the date of termination, NAWSCL shall ensure that until and unless a new PA is executed for the undertakings covered by this PA, such undertakings shall be reviewed individually in accordance with 36 CFR 800.4-800.6.

3.9 Review of Programmatic Agreement

Five years after the signature of this PA NAWSCL shall initiate consultation with the other signatory parties to determine if this PA should be terminated or amended. The PA shall remain in effect during this period of consultation unless terminated in a manner consistent with Section 3.9 of this PA.

4.0 Anti-Deficiency Act

All requirements set forth in this PA requiring expenditure of federal funds are expressly subject to the availability of appropriations and the requirements of the Anti-Deficiency Act (31 U.S.C. Section 1341). No obligation undertaken under the terms of this PA shall be interpreted to require a commitment to expend funds not appropriated for a particular purpose. If any obligation set forth in this PA because of availability of funds, that obligation must be renegotiated among NAWSCL, SHPO, and the ACHP.

5.0 Effective Date

This PA shall take effect on the date that it has been executed by NAWSCL, SHPO, and the ACHP.

Execution of this PA by NAWSCL, SHPO, and the ACHP, and subsequent implementation of its terms, evidence that NAWSCL has afforded the ACHP a reasonable opportunity to comment on the undertaking and its effects on historic properties, that NAWSCL has taken into account the effects of the undertaking on historic properties, and that NAWSCL has satisfied its responsibilities under section 106 of the NHPA and applicable implementing regulations for all aspects of the undertaking.

SIGNATORY PARTIES:

United States Navy, Commanding Officer, Naval Air Weapons Station China Lake

By CAPT D. A. Ryan Date 26 SEP 2012

Title NAWS CHINA LAKE

Advisory Council on Historic Preservation

By John M. Fowler Date 10/5/12

Title EXECUTIVE DIRECTOR

California State Historic Preservation Officer

By Milford Wayne Donaldson Date 27 SEP 2012

Title Milford Wayne Donaldson, FAIA,

CONCURRING PARTIES:

The following Federally recognized Tribal entities have been invited to participate in this Programmatic Agreement as concurring parties.

Big Pine Paiute Tribe of Owens Valley
Mr. Virgil Moose, Chairperson
P.O. Box 700
825 So. Main Street, Big Pine, CA 93513

Bishop Paiute Shoshone Tribal Council
Mr. William Vega
50 Tusu Lane
Bishop, CA 93514

Fort Independence Paiute Tribe
Mr. Israel Naylor, Chairperson
P.O. Box 67
131 No. Hwy 395
Independence, CA 93526

Lone Pine Paiute Shoshone Reservation
Mr. Melvin R. Joseph
P.O. Box 747
975 Teya Road
Lone Pine, CA 93545

Benton Paiute Tribal Council
Ms. Billie G. Saulque, Chairperson
Utu Utu Gwaitu Paiute Tribe
25669 Highway 6, PMB I
Benton, CA 93512

Bridgeport Indian Reservation
Mr. Joseph Sam, Tribal Chairperson
PO Box 37
Bridgeport, CA 93517-0037

Timbisha Shoshone Tribe
George Gholson, Tribal Chairperson
PO Box 206
Death Valley, CA 92328-0206
760-786-2374

Interested Parties

The following interested parties have received the Programmatic Agreement and ICRMP and been solicited for comments.

Kern Valley Indian Community (Tubatulabal/Kawaiisu/Koso/Yokut)
Chairperson
Mr. Ron Wermuth
P.O. Box 168
Kernville, CA 93283