United States Department of the Interior

Bureau of Land Management

&

County of San Bernardino

Draft Environmental Impact Statement/ Environmental Impact Report (EIS/EIR)

for the

Granite Mountain Wind Energy Project

DES 10-11

For the

Barstow Field Office

Barstow, California

Roxie C. Trost, Field Manager

April 2010

This page intentionally left blank.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Barstow Field Office
2601 Barstow Road
Barstow, CA 92311
http://www.blm.gov/ca/st/en/fo/barstow.html

April 2010

Dear Reader/Interested Party:

I am pleased to announce the availability of the Granite Wind LLC Wind Energy Project Draft Environmental Impact Statement/Environmental Impact Report (DEIS/DEIR) and Amendment to the California Desert Conservation Area (CDCA) Plan, for permitting of wind energy resources. Granite Wind LLC, the Applicant, is proposing to develop an up to 84-megawatt wind energy plant and associated facilities on about 100 acres within a larger 2,756-acre area that includes 2,086 acres of public lands administered by the BLM Barstow Field Office and 670 acres of privately-owned land under the County of San Bernardino land-use jurisdiction.

The site of the Proposed Action is located on unincorporated land in the Mojave Desert, approximately six miles east of the Town of Apple Valley and five miles northwest of the unincorporated community of Lucerne Valley, on the central ridge of the Granite Mountains. Also included in the proposal are a new access road to the project site, a new transmission line from the project site to an existing 220kV Southern California Edison (SCE) transmission line located in a utility corridor east of the site, and a new approximately 10-acre electrical substation (Jasper Substation) at the site of the SCE interconnection. In addition, the proposal includes an amendment to the CDCA Plan that would designate the proposed site as suitable for wind energy generation and allow for siting of approximately 1 mile of the new 3.2- to 4.7-mile transmission line from the project site to be located outside of a utility corridor.

The attached DEIS analyzes four alternatives: (1) BLM would grant the Applicant a right-of-way (ROW) for their project as proposed and amend the CDCA Plan to declare the site suitable for wind energy development, and the County would grant the applicant a County Use Permit for project development on private lands; (2) the Applicant's applications would be denied by the BLM and the County but the CDCA Plan would be amended to declare the site suitable for wind energy development; (3) the Applicant's applications would be denied and the CDCA Plan would be amended to declare the site unsuitable for wind energy development; and (4) No Action, in which the Applicant's applications would be denied and current management of the site would be maintained. Alternatives 1, 2, and 3 include an amendment to the CDCA Plan that would determine the project area suitable or unsuitable for wind energy development.

The DEIS has been prepared in accordance with the National Environmental Policy Act as well as the Federal Land Policy and Management Act, which establishes the land management authority of the BLM and provides guidance for how public lands are to be managed. The document has been sent to members of the public who requested a copy and to pertinent local, state, tribal, and federal government entities. The DEIS/DEIR has also been prepared in accordance with the California Environmental Quality Act.

This DEIS/DEIR will be circulated for a 90-day public comment period. All comments must be postmarked no later than 90 days from the date the Notice of Availability for this EIS is published in the *Federal Register*. Please send your written comments to Bureau of Land Management, Barstow Field Office, Attn: Granite Wind Project Manager, 2601 Barstow Road, Barstow, CA 92311), or by email to granitewindproject@ca.blm.gov. Additionally, comments may be mailed to Carrie Hyke, Principal Planner, County of San Bernardino Land Use Services Department, 385 North Arrowhead Avenue, San Bernardino, CA 92415-0182. Two public meetings will be held, one in Lucerne Valley and another in Apple Valley, California, to allow oral comments to be presented to the BLM and the County of San Bernardino. Please see BLM's Web page at www.blm.gov/ca/st/en/fo/barstow.html for information about the location, date, and time of these meetings. All substantive issues raised during the comment period will be considered, and modifications based on these comments may be made to the document for inclusion in the Final EIS/EIR.

Additional hard copies or CD-ROM versions of the DEIS/DEIR may be obtained by contacting Edythe Seehafer (760-252-6021) at the Barstow Field Office. The document will also be available on the Internet at www.blm.gov/ca/st/en/fo/barstow.html.

We are pleased to provide this copy of the Granite Mountain Wind Energy Project DEIS/DEIR for your review and extend our appreciation for your cooperation and assistance during this process. We look forward to your continued participation.

Roxie C. Trost

Roxie C. Trost
Field Manager

Enc: Granite Wind LLC Wind Energy Project Draft Environmental Impact Statement/Environmental Impact Report and Amendment to the CDCA Plan

TABLE OF CONTENTS

SECTION **PAGE**

EXECUTIVE SUMMARY 1
PROJECT SETTING 1
PROJECT DESCRIPTION 1
Proposed Action (Alternative 1) 1
Alternatives 2, 3, and 4 2
ENVIRONMENTAL ANALYSIS 2

CHAPTER 1 INTRODUCTION 1-1
1.1 BACKGROUND 1-1
1.2 TIERED ANALYSIS 1-1
1.3 PROJECT SUMMARY 1-3
1.4 CONTENT AND FORMAT OF DEIS/EIR 1-9
1.5 PURPOSE AND NEED - NEPA 1-9
1.6 PROJECT OBJECTIVES - CEQA 1-11
1.7 COMPLIANCE WITH OTHER APPLICABLE FEDERAL AND STATE LAWS, STATUTES, REGULATIONS, EXECUTIVE ORDERS, AND PLANS 1-12
1.7.1 NEPA/CEQA Joint Process 1-13
1.7.2 Bureau of Land Management 1-13
1.7.3 San Bernardino County 1-14
1.8 DECISION FRAMEWORK 1-15
1.8.1 Public Scoping 1-15
1.8.2 Tribal Consultation 1-15
1.8.3 Planning Issues 1-15

CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES 2-1
2.1 STATUTORY AND REGULATORY REQUIREMENTS FOR ALTERNATIVES 2-1
2.1.1 NEPA Requirements 2-1
2.1.2 CEQA Requirements 2-2
2.2 ALTERNATIVES EVALUATED IN THIS DEIS/EIR 2-2
2.2.1 Summary of Alternatives Evaluated 2-3
2.2.2 Alternative 1: Proposed Project 2-4
2.2.3 Agency Preferred Alternative 2-14
2.3 ALTERNATIVES CONSIDERED AND NOT CARRIED FORWARD FOR DETAILED ANALYSIS 2-14
2.3.1 Same Project Area and Turbines, with Reduced Turbine Size 2-14
2.3.2 Reduced Number of Turbines 2-15
2.3.3 Alternative Turbine Technologies 2-15
2.3.4 Alternative Locations 2-15

CHAPTER 3 AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES 3-1
3.1 TYPES OF EFFECTS 3-1
3.2 AIR QUALITY 3-5
3.2.1 Impact Criteria 3-5
3.2.2 Regulatory Setting 3-6
3.2.3 Affected Environment 3-9
3.2.4 Environmental Consequences 3-11
3.2.5 Avoidance, Minimization, and/or Mitigation Measures 3-16
3.2.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented 3-18
3.3 VISUAL RESOURCES 3-19
3.3.1 Impact Criteria 3-19

3.3.2 Regulatory Setting 3-19
3.3.3 Affected Environment 3-23
3.3.4 Environmental Consequences and Mitigation 3-52
3.3.5 Avoidance, Minimization, and/or Mitigation Measures....3-64
3.3.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented....3-66
3.4 BIOLOGICAL RESOURCES 3-77
3.4.1 Impact Criteria 3-77
3.4.2 Regulatory Setting 3-78
3.4.3 Affected Environment 3-84
3.4.4 Environmental Consequences....3-95
3.4.5 Avoidance, Minimization, and Mitigation Measures....3-101
3.4.6 Summary of Project Environmental Impacts after Mitigation Measures are Implemented....3-110
3.5 NOISE....3-111
3.5.1 Acoustical Analysis Background....3-111
3.5.2 Impact Criteria 3-113
3.5.3 Regulatory Setting 3-113
3.5.4 Affected Environment 3-117
3.5.5 Environmental Consequences....3-121
3.5.6 Avoidance, Minimization, and/or Mitigation Measures....3-129
3.5.7 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented....3-130
3.6 CULTURAL RESOURCES....3-131
3.6.1 Impact Criteria 3-131
3.6.2 Regulatory Settings 3-132
3.6.3 Affected Environment 3-136
3.6.4 Environmental Consequences....3-149
3.6.5 Avoidance, Minimization, and/or Mitigation Measures....3-151
3.6.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented....3-153
3.7 GEOLOGY, SEISMICITY, AND SOIL RESOURCES 3-155
3.7.1 Impact Criteria 3-155
3.7.2 Regulatory Settings 3-155
3.7.3 Affected Environment 3-157
3.7.4 Environmental Consequences....3-163
3.7.5 Avoidance, Minimization, and/or Mitigation Measures....3-166
3.7.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented....3-168
3.8 HYDROLOGY AND WATER QUALITY....3-169
3.8.1 Impact Criteria 3-169
3.8.2 Regulatory Settings 3-169
3.8.3 Affected Environment 3-173
3.8.4 Environmental Consequences....3-180
3.8.5 Avoidance, Minimization, and/or Mitigation Measures....3-184
3.8.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented....3-185
3.9 LAND USE AND PLANNING....3-189
3.9.1 Impact Criteria 3-189
3.9.2 Regulatory Setting 3-189
3.9.3 Affected Environment 3-191
3.9.4 Environmental Consequences....3-193

3.9.5 Avoidance, Minimization, and/or Mitigation Measures....3-198
3.9.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented....3-199
3.10 RECREATION....3-201
3.10.1 Impact Criteria....3-201
3.10.2 Regulatory Settings....3-201
3.10.3 Affected Environment....3-201
3.10.4 Environmental Consequences....3-202
3.10.5 Avoidance, Minimization, and/or Mitigation Measures....3-204
3.10.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented....3-204
3.11 SOCIOECONOMICS....3-207
3.11.1 Impact Criteria....3-207
3.11.2 Regulatory Setting....3-207
3.11.3 Affected Environment....3-208
3.11.4 Environmental Consequences....3-211
3.11.5 Avoidance, Minimization, and/or Mitigation Measures....3-214
3.11.6 Summary of Project Environmental Impacts after Mitigation Measures are Implemented....3-214
3.12 ENVIRONMENTAL JUSTICE....3-217
3.12.1 Impact Criteria....3-217
3.12.2 Regulatory Setting....3-217
3.12.3 Affected Environment....3-218
3.12.4 Avoidance, Minimization, and/or Mitigation Measures....3-219
3.12.5 Summary of Project Environmental Impacts after Mitigation Measures are Implemented....3-220
3.13 TRANSPORTATION SYSTEMS AND FACILITIES....3-221
3.13.1 Impact Criteria....3-221
3.13.2 Regulatory Settings....3-221
3.13.3 Affected Environment....3-222
3.13.4 Environmental Consequences....3-224
3.13.5 Avoidance, Minimization, and/or Mitigation Measures....3-228
3.13.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented....3-230
3.14 UTILITIES AND SERVICE SYSTEMS....3-231
3.14.1 Impact Criteria....3-231
3.14.2 Regulatory Settings....3-231
3.14.3 Affected Environment....3-233
3.14.4 Environmental Consequences....3-237
3.14.5 Avoidance, Minimization, and/or Mitigation Measures....3-239
3.14.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented....3-240
3.15 HAZARDS AND HAZARDOUS MATERIALS....3-241
3.15.1 Impact Criteria....3-241
3.15.2 Regulatory Setting....3-242
3.15.3 Affected Environment....3-244
3.15.4 Environmental Consequences....3-247
3.15.5 Avoidance, Minimization, and/or Mitigation Measures....3-251
3.15.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented....3-253
3.16 PALEONTOLOGICAL RESOURCES....3-255
3.16.1 Impact Criteria....3-255

3.16.2 Regulatory Setting 3-255
3.16.3 Affected Environment 3-256
3.16.4 Environmental Consequences 3-258
3.16.5 Avoidance, Minimization, and/or Mitigation Measures 3-259
3.16.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented 3-260
3.17 CUMULATIVE EFFECTS 3-261
3.17.1 General Methodology 3-261
3.17.2 Past, Present, and Reasonably Foreseeable Future Actions 3-261
3.17.3 Cumulative Effects Analysis 3-265
3.18 IRREVERSIBLE EFFECTS 3-279
3.18.1 Air Quality 3-279
3.18.2 Visual Resources 3-279
3.18.3 Biological Resources 3-279
3.18.4 Noise 3-279
3.18.5 Cultural Resources 3-280
3.18.6 Geology, Seismicity, and Soil Resources 3-280
3.18.7 Hydrology And Water Quality 3-280
3.18.8 Land Use and Planning 3-280
3.18.9 Recreation 3-280
3.18.10 Socioeconomics 3-281
3.18.11 Environmental Justice 3-281
3.18.12 Transportation Systems and Facilities 3-281
3.18.13 Utilities and Service Systems 3-281
3.18.14 Hazards and Hazardous Materials 3-281
3.18.15 Paleontological Resources 3-282
3.19 SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY OF THE ENVIRONMENT 3-283

CHAPTER 4 CEQA SPECIFIC REQUIREMENTS AND FINDINGS OF SIGNIFICANCE 4-1
4.1.1 Environmentally Superior Alternative 4-1
4.1.2 Thresholds of Significance 4-1
4.1.3 Effects Found To Be Not Significant 4-5
4.1.4 Significant Effects That Cannot Be Avoided 4-5
4.1.5 Cumulative Effects 4-5
4.1.6 Growth-Inducing Effects 4-6

CONSULTATION AND COORDINATION 4-1

CHAPTER 5 CEQA SPECIFIC REQUIREMENTS AND FINDINGS OF SIGNIFICANCE 5-2
5.1 COORDINATION 5-1
5.2 PUBLIC INVOLVEMENT AND SCOPING 5-1
5.3 TRIBAL CONSULTATION 5-3
5.4 LIST OF PREPARERS 5-4
5.5 LIST OF RECIPIENTS OF THE DEIS/EIR 5-5

LIST OF APPENDICES

APPENDIX A: BIBLIOGRAPHY
APPENDIX B: GLOSSARY

TABLE OF CONTENTS

VOLUME II:

APPENDIX C: SCOPING COMMENTS
APPENDIX D: AIR QUALITY ANALYSIS
APPENDIX E: VISUAL IMPACT ANALYSIS
APPENDIX F: BIOLOGICAL REPORTS
APPENDIX G: NOISE REPORT
APPENDIX H: CULTURAL REPORT
APPENDIX I: DESKTOP GEOTECH REPORT
APPENDIX J: WQMP
APPENDIX K: PSOMAS REPORT
APPENDIX L: LAND USE CONSISTENCY TABLE
APPENDIX M: GRANITE ECONOMIC AND FISCAL REPORT
APPENDIX N: FAA PERMITS
APPENDIX O: PALEONTOLOGICAL REPORT
APPENDIX P: MITIGATION MEASURES/BMPS

TABLES

TABLE ES-1: COMPARISON OF IMPACTS AND CEQA LEVEL OF SIGNIFICANCE AFTER MITIGATION MATRIX 3
TABLE 1-1: AGENCY ROLES AND POTENTIAL PERMIT/APPROVALS 1-12
TABLE 1.2: PLANNING ISSUES NOT ANALYZED FURTHER 1-16
TABLE 2-1 TOTAL LAND AREA AFFECTED BY SPECIFIC PROJECT COMPONENT 2-5
TABLE 2-2 DISTRIBUTION OF PROJECT IMPROVEMENTS 2-6
TABLE 2-3 TEMPORARY CONSTRUCTION FACILITIES 2-12
TABLE 3.2-A FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS 3-7
TABLE 3.2-B: MDAQMD AIR QUALITY ATTAINMENT STATUS 3-9
TABLE 3.2-C: ESTIMATED MITIGATED TOTAL ANNUAL CONSTRUCTION EMISSIONS 3-12
TABLE 3.2-D: ESTIMATED TOTAL ANNUAL CONSTRUCTION EMISSIONS 3-18
TABLE 3.3-A: MAJOR COMPONENT COLOR AND MATERIALS 3-52
TABLE 3.3-B: VISUAL IMPACT SIGNIFICANCE – SENSITIVE VIEWING AREAS 3-59
TABLE 3.5-A: SOUND LEVELS OF TYPICAL NOISE SOURCES AND NOISE ENVIRONMENTS 3-112
TABLE 3.5-B NOISE STANDARDS FOR STATIONARY NOISE SOURCES 3-116
TABLE 3.5-C: SAN BERNARDINO COUNTY NOISE STANDARDS – NOISE LIMIT CATEGORY 3-117
TABLE 3.5-D: LONG-TERM MEASUREMENT SITE DATA 3-118
TABLE 3.5-E: SHORT-TERM MEASUREMENT SITE DATA 3-121
TABLE 3.5-F: ROAD CONSTRUCTION AND MAINTENANCE 3-122
TABLE 3.5-G: WIND TURBINE FOUNDATION CONSTRUCTION NOISE LEVELS 3-123
TABLE 3.5-H: WIND TURBINE CONSTRUCTION NOISE LEVELS 3-123
TABLE 3.5-I: AVERAGE DAILY TRAFFIC VOLUME 3-124
TABLE 3.5-J: DBA-SPL AT NOISE-SENSITIVE RECEPTORS WITH VARYING WIND SPEEDS @ NORTHEAST HEADING 3-125
TABLE 3.5-K: DBA-SPL AT NOISE-SENSITIVE RECEPTORS WITH VARYING WIND SPEEDS @ SOUTHWEST HEADING 3-125
TABLE 3.5-L: CUMULATIVE PROJECT OPERATIONAL NOISE LEVELS WITH VARYING WIND SPEEDS @ NORTHEAST HEADING (DBA-SPL) 3-126
TABLE 3.5-M: CUMULATIVE PROJECT OPERATIONAL NOISE LEVELS WITH VARYING WIND SPEEDS @ SOUTHWEST HEADING (DBA-SPL) 3-126
TABLE 3.5-N: YEAR 2011 PROJECT OPERATIONAL CONDITIONS 3-126
TABLE 3.5-O: BLAST NOISE - ROUTE 1A AND TURBINE FOUNDATION CONSTRUCTION NOISE LEVELS 3-127

TABLE 3.5-P: BLAST NOISE - ROUTE 1B AND TURBINE FOUNDATION CONSTRUCTION NOISE LEVELS 3-128
TABLE 3.6-A: RECORDED PREHISTORIC & HISTORIC ARCHEOLOGICAL SITES WITHIN A ONE-MILE RADIUS OF THE PROJECT LOCATION 3-142
TABLE 3.6-B: ARCHAEOLOGICAL SITES RECORDED....3-147
TABLE 3-6.C ARCHAEOLOGICAL ISOLATES RECORDED....3-149
TABLE 3.8-A: STATE-DESIGNATED USES FOR MOJAVE RIVER....3-170
TABLE 3.8-B: BENEFICIAL USES OF SURFACE WATER RECEIVING WATERS FOR MOJAVE RIVER 3-175
TABLE 3.8-C: NUMERIC WATER QUALITY OBJECTIVES 3-176
TABLE 3.8-D: APPLICABLE NARRATIVE WATER QUALITY OBJECTIVES....3-176
TABLE 3.8-E: BENEFICIAL USES OF RECEIVING WATERS FOR EPHEMERAL STREAMS 3-177
TABLE 3.8-F: NUMERIC WATER QUALITY OBJECTIVES - REC-2 3-178
TABLE 3.8-G: APPLICABLE NARRATIVE WATER QUALITY OBJECTIVES - EPHEMERAL STREAMS 3-178
TABLE 3.8-H: BENEFICIAL USES OF GROUNDWATER FOR UPPER MOJAVE RIVER VALLEY UNIT 3-179
TABLE 3.8-I: BENEFICIAL USES OF GROUNDWATER FOR LUCERNE UNIT....3-180
TABLE 3.8-J: PRE- AND POST-DEVELOPMENT HYDROLOGY COMPARISON....3-181
TABLE 3.11-A: DEMOGRAPHIC PROFILE....3-209
TABLE 3.11-B: SAN BERNARDINO COUNTY REVENUE, 2008....3-211
TABLE 3.11-C: EXPENDITURES FOR O & M 3-212
TABLE 3.12-A: MINORITY & LOW-INCOME COMPARISON....3-218
TABLE 3.13-A: TRAFFIC LEVEL OF SERVICE (LOS) DEFINITIONS....3-223
TABLE 3.13-B: GENERALIZED PEAK HOURLY/DIRECTIONAL CAPACITIES 3-223
TABLE 3.13-C: ROADWAY LEVEL OF SERVICE – EXISTING CONDITIONS 3-224
TABLE 3.13-D: ANTICIPATED PROJECT CONSTRUCTION TRIP GENERATION 3-225
TABLE 3.13-E: ROADWAY LEVEL OF SERVICE – YEAR 2011 NO PROJECT CONDITIONS....3-226
TABLE 3.13-F: ROADWAY LEVEL OF SERVICE – YEAR 2011 PROJECT CONSTRUCTION CONDITIONS....3-226
TABLE 3.13-A: WATER DEMAND 3-238
TABLE 3.17-A – REASONABLY FORESEEABLE LOCAL AND REGIONAL PROJECTS ANALYZED FOR CUMULATIVE IMPACTS....3-263
TABLE 4.1: CEQA THRESHOLDS OF SIGNIFICANCE 4-2
TABLE 4.2: CUMULATIVE IMPACTS 4-5
TABLE 4.2: SCAG POPULATION FORECASTS 4-6
TABLE 5.1: ORGANIZATIONS, TRIBES, AND AGENCIES CONSULTED 5-1
TABLE 5.2: SCOPING MEETINGS 5-2
TABLE 5.3: SUMMARY OF KEY ISSUES 5-2
TABLE 5.5: LIST OF PREPARERS....5-4

TABLE OF CONTENTS

FIGURES

FIGURE 1-1: VICINITY MAP 1-5
FIGURE 1-2: PROJECT SITE AND LOCATION OF TURBINES....1-6
FIGURE 1-3: CONCEPTUAL WIND GENERATING TURBINE 1-7
FIGURE 3.3-1 PROJECT VICINITY MAP 3-25
FIGURE 3.3-2 PROJECT LAYOUT MAP 3-26
FIGURE 3.3-3 LANDOWNERSHIP MAP....3-29
FIGURE 3.3-4 KEY OBSERVATION POINT (KOP) AND CHARACTER PHOTOS....3-30
FIGURE 3.3-5 KOP LOCATIONS 3-31
FIGURE 3.3-6 SENSITIVE RECEPTORS 3-35
FIGURE 3.3-7 CENSUS AND AVERAGE DAILY TRAFFIC COUNT (ADT) 3-36
FIGURE 3.3-8 CHARACTER PHOTOS OF PROJECT AREA 3-39
FIGURE 3.3-9 CHARACTER PHOTOS OF PROJECT AREA 3-40
FIGURE 3.3-10 CHARACTER PHOTOS OF PROJECT AREA 3-41
FIGURE 3.3-11 CHARACTER PHOTOS OF PROJECT AREA 3-42
FIGURE 3.3-12 CHARACTER PHOTOS OF PROJECT AREA 3-43
FIGURE 3.3-13 CHARACTER PHOTOS OF PROJECT AREA 3-44
FIGURE 3.3-14 CHARACTER PHOTOS OF PROJECT AREA 3-45
FIGURE 3.3-15 CHARACTER PHOTOS OF PROJECT AREA 3-46
FIGURE 3.3-16 CHARACTER PHOTOS OF PROJECT AREA 3-47
FIGURE 3.3-17 INTERIM VISUAL RESOURCES MANAGEMENT CLASSES....3-67
FIGURE 3.3-18 EXISTING AND PROPOSED VIEW FROM KOP 1....3-68
FIGURE 3.3-19 EXISTING AND PROPOSED VIEW FROM KOP 2....3-69
FIGURE 3.3-20 EXISTING AND PROPOSED VIEW FROM KOP 3....3-70
FIGURE 3.3-21 EXISTING AND PROPOSED VIEW FROM KOP 4 3-71
FIGURE 3.3-22 EXISTING AND PROPOSED VIEW FROM KOP 5 3-72
FIGURE 3.3-23 EXISTING AND PROPOSED VIEW FROM KOP 6 3-73
FIGURE 3.3-24 EXISTING AND PROPOSED VIEW FROM KOP 7 3-74
FIGURE 3.3-25 EXISTING AND PROPOSED VIEW FROM KOP 8 3-75
FIGURE 3.5-1: NOISE MEASUREMENT LOCATIONS....3-119
FIGURE 3.7-1 ALQUIST-PRIOLO ZONE MAP....3-161
FIGURE 3.7-2 SOILS MAP 3-162
FIGURE 3.8-1 WATERSHED BOUNDARY MAP....3-187
FIGURE 3.9-1: CDCA LAND USE 3-195
FIGURE 3.9-2: SAN BERNARDINO COUNTY LAND USE 3-196
FIGURE 3.10-1: GRANITE MOUNTAIN RECREATIONAL RESOURCES 3-205
FIGURE 3.11-1 CENSUS BLOCK GROUP....3-215
FIGURE 3.14-1: EXISTING & PROPOSED SCE TRANSMISSION LINE....3-235
FIGURE 3.17-1 POTENTIAL CUMULATIVE PROJECTS....3-277

ACRONYMS AND ABBREVIATIONS

AAQS	Ambient Air Quality Standards
AB	Assembly Bill
ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
ACLUP	Airport Comprehensive Land Use Plans
ADT	Average Daily Trips
AFB	Air Force Base
AICUZ	Air Installation Compatible Use Zones
AIRFA	American Indian Religious Freedom Act
a.m.	morning
ANSI	
APE	Area of Potential Effect
AR	Air Safety Review Area
ARPA	Archeological Resources Protection Act
B	Boron
BG	Block Group
BLM	United States Bureau of Land Management
BMP	Best Management Practices
^{o}C	degrees Celsius
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CCD	Census County Division
CCS	crypto-crystalline silicate
CDCA	California Desert Conservation Area
CDFG	California Department of Fish and Game
CDHS	California Department of Health Services
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations

CH_4	Methane
CHRIS	California Historical Resource Information System
CGS	California Geological Survey
Cl	Chloride
CNEL	Community Noise Equivalent Level
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide equivalent
CO	Carbon Monoxide
the County	County of San Bernardino
CPUC	California Public Utility Commission
CNO	California and Nevada Operations Office
CRHR	California Register of Historical Resources
CRMP	Cultural Resources Management Plan
CRPP	Cultural Resource Project Plans
CBRWQCB	Colorado River Basin Regional Water Quality Control Board
CUP	Conditional Use Permit
CWA	Clean Water Act
dB	Decibel
dBA	Decibel A-weighted
DEIS/EIR	Environmental Impact Statement/Environmental Impact Report
DEM	Digital Elevation Model
DNL	Day-night noise level
DOD	Department of Defense
DOE	Department of Energy
DTSC	California Department of Toxic Substances Control
EA	Environmental Assessment
EIS	Environmental Impact Statement
EIR	Environmental Impact Report
EN	Energy facilities
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
^{o}F	Degrees Fahrenheit
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map

F	Flouride
FLPMA	Federal Land Policy Management Act
GHG	Greenhouse Gas
GIS	Geographic Information System
GO	General Order
Granite Wind	Granite Wind, LLC
GWh	Gigawatts per hour
HFC	Hydrofluorocarbons
HFE	Hydroflourinated ethers
IEEE	Institute of Electrical and Electronic Engineers
IPCC	Intergovernmental Panel on Climate Change
kV	kilovolt
kW	kilowatt
KOP	Key Observation Point
L_{eq}	Equivalent sound level
LOS	Level of service
LRWQCB	Lahontan Regional Water Quality Control Board
LT	Long term
LVEDA	Lucerne Valley Economic Development Association
M	meter
MCAGCC	Marine Corps Air Ground Combat Center
MCD	minor civil divisions
MCL	maximum contaminant level
MDAB	Mojave Desert Air Basin
MDAQMD	Mojave Desert Air Quality Management District
mg	milligram
mg/L	milligram per liter
MM	mitigation measure
Mph	miles per hour
msl	mean sea level
MUC	Multiple use class
MW	Megawatt
MWh	Megawatt per hour
N2O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAGRPA	National Graves and Repatriation Act

NAHC	Native American Heritage Commission
NB	northbound
NDIR	Non-Dispersive Infrared Photometry
NEPA	National Environmental Protection Act
NF_3	Nitrogen trifluoride
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NOP	Notice of Preparation
NO_2	Nitrogen dioxide
NO_x	Nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NREL	National Renewable Energy Laboratory
NRHP	National Register of Historic Places
O&M	Operations and Maintenance
OHV	Off-Highway Vehicle
OPR	California Governor's Office of Planning and Research
OSHA	Office of Safety and Health Administration
PEIS	Programmatic Environmental Impact Statement
PFC	Perfluorocarbons
p.m.	nighttime
PM	Particulate Matter
POD	Plan of development
RC	Resource conservation
REPP	Renewable Energy Policy Project
RES	Renewable Energy Systems
RL	Rural living
ROD	Record of Decision
ROG	Reactive organic gases
ROW	Right-of-Way
RMP	Resource management Plan
rpm	rotations per minute
RWQCB	Regional Water Quality Control Board
SB	southbound
SBAIC	San Bernardino Archaeological Information Center
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District

SCE	Southern California Edison
SCLA	Southern California Logistics Airport
SF_6	Sulfur hexafluoride
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SMCL	secondary maximum contaminant level
SO_2	Sulfur dioxide
SO_4	Sulfate
SPL	Sound pressure level
SR	State Route
ST	short term
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TDS	Total dissolved solids
TWA	Time-weighted average (sound level)
UBC	Uniform Building Code
USACE	United States Army Corps of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
USDA	United States Department of Agriculture
USGS	United States Geological Survey
VAWT	Vertical Axis Wind Turbine
VOC	Volatile organic compound
VRM	Visual Resource Management
VSOI	Visual Sphere of Influence
WMP	Western Mojave Plan
WTG	Wind Turbine Generator
WQMP	Water Quality Management Plan

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

PROJECT SETTING

The proposed Granite Mountain Wind Energy Project (Proposed Project) would be sited on U.S. Bureau of Land Management (BLM)-administered public land and private land approximately 14 miles east of Victorville in San Bernardino County, California. The Proposed Project would be located in the Granite Mountains, within approximately 2,086 acres of public lands administered by the BLM Barstow Field Office and 670 acres of privately owned land under county land use jurisdiction.

The Proposed Project site consists of vacant desert lands. There are no established communities or residences within any portion of the Project site.

The BLM's purpose and need for the Granite Mountain Wind Energy Project is to respond to Granite Wind LLC's application under Title V of the FLPMA (43 USC 1761) for authorization of a right-of-way (ROW) on BLM-managed lands to construct, operate, and decommission a wind energy facility and associated infrastructure in compliance with the Federal Land Policy Management Act (FLPMA), BLM ROW regulations, and other applicable federal laws. The BLM would decide whether to approve, approve with modification, or deny issuance of a ROW authorization to Granite Wind LLC for the proposed Granite Mountain Wind Energy Project. Pursuant to BLM's California Desert Conservation Area (CDCA) Plan (1980, as amended), sites associated with power generation or transmission not identified in the CDCA Plan will be considered through the plan amendment process. The BLM will also decide whether the Project site is suitable or unsuitable for wind energy generation. The planning decision to be made provides the framework for the alternatives considered.

PROJECT DESCRIPTION

Proposed Action (Alternative 1)

Under Alternative 1, the CDCA Plan would be amended to determine the Project area to be environmentally suitable for development of wind energy facilities and associated infrastructure. Under this Alternative, a BLM ROW for the Proposed Project would be approved. The Proposed Project also requires the issuance of a Conditional Use Permit (CUP) and a Major Variance for height from San Bernardino County (County), for which the applicant applied in October 2007. The County is currently reviewing these applications.

The Proposed Project would include the installation of up to 28 2.3-megawatt (MW) Siemens wind turbines (or a similar model of wind turbine between 2.1 MW and 3 MW in capacity) on a permanent Project footprint of approximately between 91.2 to 109.3 acres and a total ROW of 2,756 acres. At full capacity, the Proposed Project is anticipated to produce approximately 185,000 megawatt-hours (MWh) of electricity per year.

The proposed wind turbine towers would be 80 meters (262 feet) tall (hub height) above existing grade. The turbine blades would extend an additional 50.5 meters (166 feet) above the hub, for a total tip height of 130.5 meters (428 feet) above existing grade.

Twenty of the wind turbines are proposed to be located on federal lands administered by the BLM, and eight wind turbines are proposed on immediately adjacent, private land. The Proposed Project would also require the construction of a new access road, Project substation, overhead transmission line, interconnection to the Southern California Edison 220-kilovolt transmission system, and an operations and maintenance building. Temporary facilities associated with construction of the Project include a construction office, on-site

concrete batch and gravel crushing plants, and materials staging and assembly areas. Each wind turbine would have a pad-mounted transformer located beside the wind turbine tower. A maintenance road and an underground electrical and communication line will connect each wind turbine tower. Two permanent meteorological towers would be installed to measure wind speed and direction across the site.

The wind turbines and associated facilities would be placed in locations that minimize environmental impacts, yet maximize energy production. The Proposed Project would comply with the requirements of the BLM ROW authorization, including any required monitoring during construction, operation, and maintenance and decommissioning.

The Proposed Project is expected to have an operating lifetime of 25 to 30 years, after which it may no longer be cost effective to continue operation. At or near that time, the applicant would determine if the operational life of the Project could be extended, the Project should be re-powered with new wind turbines, or the Project should be decommissioned. Should the Project's operational life be extended or the Project is re-powered, the applicant would work with the BLM and County to ensure the appropriate environmental reviews were conducted and applicable permits extended or obtained at that time. The goal of Project decommissioning is to remove the installed power generation equipment and return the site to a condition as close to a pre-construction state as feasible.

Alternatives 2, 3, and 4

Three other alternatives are being considered, along with the Proposed Action, in this Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR).

- Alternative 2 is the No Action - Site Suitable alternative. BLM would not authorize the ROW, but would amend the CDCA Plan to determine the site suitable for wind energy development, and the County would not grant a conditional use permit for the Project development on private lands. The Proposed Project would not be implemented.
- Alternative 3 proposes to amend the CDCA Plan to Determine the Site Unsuitable. BLM would amend the CDCA Plan to specify that the site of this Proposed Project is unsuitable for wind energy development and the County would not grant a conditional use permit for Project development on private lands. The Granite Mountain Wind Energy Project would not be implemented.
- Alternative 4 is the No Action alternative. BLM would not amend the CDCA Plan and would not authorize the ROW, and County would not grant a conditional use permit for Project development on private lands. The Proposed Project would not be implemented.

ENVIRONMENTAL ANALYSIS

Table ES-1 summarizes impacts related to the Proposed Project. The selection of Alternative 1 would result in amendment of the CDCA Plan to determine the suitability of the site for the development of a wind energy project. However, the actual environmental consequences anticipated would result from the development of the Proposed Project; therefore, the table summarizes environmental impacts resulting from the Project pursuant to the National Environment Policy Act (NEPA) and the California Environmental Quality Act (CEQA) Guidelines Section 15123(b)(1).

Table ES-1: Comparison of Impacts and CEQA Level of Significance after Mitigation Matrix

Topics / Impacts	Impacts Summary and CEQA Level of Significance after Mitigation		
	Alternative 1: Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development: Approval of Proposed Project	Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development	Alternatives 3 & 4: No Action on Either Site Suitability Determination or Proposed Project
Air Quality			
Construction of the wind energy generation facility may exceed air quality standards.	Project emission totals would exceed the Mojave Desert Air Quality Management District (MDAQMD) thresholds of significance for particulate matter $(PM)_{10}$ and $PM_{2.5}$ during construction. With mitigation, as further detailed in Section 3.2 *Air Quality*, $PM_{2.5}$ emissions would be within acceptable federal or state standards. As mitigated, PM_{10} emissions would not exceed federal standards, but they could still exceed state standards during the construction period and would be within acceptable federal and state standards during operations. **Alt Route 1A**: Project emission totals would exceed the MDAQMD thresholds of significance for PM_{10} and $PM_{2.5}$ during construction. Emissions resulting from the construction and future operation of a route at this location would be within acceptable federal and state standards. **Alt Route 1B:** Same comment as above. **Jasper Substation Alt 1A:** Project emission totals would exceed the MDAQMD thresholds of significance for PM_{10} and $PM_{2.5}$ during construction. Emissions resulting from the construction and future operation of the substation at this location would be within acceptable federal and state standards. **Jasper Substation Alt 1B:** Same comment as above.	No mitigation required. No change to existing conditions. However, future proposed Wind Development Projects could potentially exceed standards.	No mitigation required. No change to existing conditions.
Visual Resources			
Wind turbines may have adverse effects to scenic resources	Wind turbines would be visible from key observation points in the vicinity. Mitigation measures, as further detailed in Section 3.3 *Visual Resources,* will be implemented to minimize impacts to visual resources. However, under CEQA, impacts remain significant. **Alt Route 1A**: Because of the low visibility and contrast of the road against the existing conditions, especially when compared to other Project features, impacts to visual resources from the access road are not anticipated. **Alt Route 1B:** Same comment as above. **Jasper Substation Alt 1A:** The substation is not anticipated to impact visual resources due to a lower contrast viewer exposure and existing scenic quality. **Jasper Substation Alt 1B:** The substation at this location is anticipated to result in visual impacts, as it is more immediate than the turbines and would dominate foreground views from the highway. However, depending on the specific location selected for the substation, views may be obscured by existing and proposed transmission lines. Impacts would be reduced with implementation of mitigation measures, as further detailed in Section 3.3 *Visual Resources*.	No mitigation required. No change to existing conditions. However, future proposed Wind Development Projects could potentially affect visual resources in the area.	No mitigation required. No impact. No change to existing conditions.

Topics / Impacts	Impacts Summary and CEQA Level of Significance after Mitigation		
	Alternative 1: Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development: Approval of Proposed Project	Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development	Alternatives 3 & 4: No Action on Either Site Suitability Determination or Proposed Project
Biological Resources			
Location of wind turbines may affect species or habitats	Construction and operation of wind turbines may have impacts on species and habitats in the Project area. Mitigation measures and BLM BMPs, as further detailed in Section 3.4 *Biological Resources,* would be implemented to minimize and/or avoid impacts to biological resources. **Alt Route 1A**: Access Route 1A crosses Mojave creosote bush scrub and Mojave mixed woody scrub communities. Disturbance is not considered adverse because these habitats are common throughout the region. Implementation of mitigation measures, as further detailed in Section 3.4 *Biological Resources,* would be implemented to further minimize and/or avoid impacts to biological resources. **Alt Route 1B:** Access Route 1B crosses four native plant communities (i.e., Mojave creosote bush scrub, Mojave mixed woody scrub, Joshua tree woodland, and partially stabilized desert sand fields). Implementation of mitigation measures, as further detailed in Section 3.4 *Biological Resources,* would be implemented to minimize and/or avoid impacts to biological resources. **Jasper Substation Alt 1A:** Both alternative substation 1A and 1B would result in the loss or conversion of native vegetation communities. substation construction and operation requires consultation with the CDFG and/or USFWS to ensure that this element of the Proposed Project would not jeopardize the continued existence of special status species. Furthermore, any proposed fill, obstruction, diversion, and so forth of drainages within the substation requires a California Fish and Game (CFG) Streambed Alteration Agreement, and Regional Water Quality Control Board (RWQCB) 401 Permit to assure that activities do not result in a net loss of natural drainage courses in the region. Implementation of mitigation measures, as further detailed in Section 3.4 *Biological Resources,* would be implemented to minimize and/or avoid impacts to biological resources. **Jasper Substation Alt 1B:** Environmental impacts are the same as the Substation Alternative 1A, see analysis above.	No mitigation required. No change to existing conditions.	No mitigation required. No impact. No change to existing conditions.
Noise and Vibration			
Temporary noise levels may increase as a result of construction of wind turbines. Ambient noise levels may increase.	At every noise-sensitive receptor, and for every wind condition, the noise levels do not exceed the San Bernardino County 45 decibels A-weighted (dBA) equivalent sound level (L_{eq}) threshold. Therefore, no CEQA significant noise impacts would occur as a result of operational noise generated by the Proposed Project. Construction of the Proposed Project would temporarily exceed 55 dBA noise levels. Mitigation measures, as further detailed in Section 3.5 *Noise and Vibration,* would be implemented to minimize impacts from construction. **Alt Route 1A**: The construction of Route 1A would generate an increase in noise levels. Implementation of mitigation measures would minimize impacts from construction. **Alt Route 1B:** *Same comment as above.*	No mitigation required. No change to existing conditions. However, future proposed Wind Development Projects could potentially exceed standards.	No mitigation required. No impact. No change to existing conditions.

Topics / Impacts	Impacts Summary and CEQA Level of Significance after Mitigation		
	Alternative 1: Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development: Approval of Proposed Project	Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development	Alternatives 3 & 4: No Action on Either Site Suitability Determination or Proposed Project
	Jasper Substation Alt 1A: No measurable impacts due to noise from substation 1A and associated power transmission lines are anticipated at this proposed location. Implementation of best management practices (BMPs) and standard mitigation measures would further reduce impacts. **Jasper Substation Alt 1B:** Same comment as above.		
Cultural Resources			
Construction of the wind energy generation facility may cause a substantial adverse change in significant historical and/or archeological resources.	No buildings or structures exist within the Proposed Project area, and none are known to occur within a one-mile radius. The visual impact analysis verifies that no other historic landmarks or features would be affected. The possibility remains that subsurface cultural resources could exist in the area of potential effect (APE). Implementation of identified mitigation measures and BMPs, as further detailed in Section 3.6 *Cultural Resources,* would minimize impacts to cultural resources. **Alt Route 1A**: Two previously recorded sites and four newly recorded sites are located within the route's APE. Implementation of identified mitigation measures and BMPs, as further detailed in Section 3.6 *Cultural Resources*, would minimize impacts to the recorded sites. **Alt Route 1B:** Six previously recorded sites and fourteen newly recoded sites are located within the route's APE. Implementation of identified mitigation measures and BMPs, as further detailed in Section 3.6 *Cultural Resources,* would minimize impacts to the recorded sites. **Jasper Substation Alt 1A:** Two archaeological sites are located within the Substation 1A APE that could be affected during construction and/or operations. Implementation of identified mitigation measures and BMPs, as further detailed in Section 3.6 *Cultural Resources,* would minimize impacts to resources that may exist and be discovered during Project construction. **Jasper Substation Alt 1B:** No archaeological sites and one isolate are located within the Substation 1B APE that could be affected during construction and/or operations. Implementation of identified mitigation measures and BMPs, as further detailed in Section 3.6 *Cultural Resources,* would minimize impacts to resources that may exist and be discovered during Project construction.	No mitigation required. No change to existing conditions. Future proposed Wind Development Projects could potentially have an adverse effect on unknown cultural resources.	No mitigation required. No impact. No change to existing conditions.
Geology, Seismicity, and Mineral Resources			
The wind energy generation facility may be at risk for potential for seismically-related ground failure. Construction of the wind energy generation facility	The Proposed Project may be impacted by seismic activities. The Proposed Project may also impact soil erosion rates. Implementation of identified mitigation measures and BMPs, as further detailed in Section 3.7 *Geology, Seismicity, and Soil Resources*, would minimize impacts during seismic events in the Project area. **Alt Route 1A**: Construction and utilization of the proposed access route could potentially result in soil erosion, landslide, or rockfall hazards and also impact geologic and mineral resources in the area. Implementation of identified mitigation measures, as further detailed in Section 3.7 *Geology, Seismicity, and Soil Resources,* would minimize impacts to such resources and address potential	No mitigation required. No change to existing conditions anticipated.	No mitigation required. No impact. No change to existing conditions.

Topics / Impacts	Impacts Summary and CEQA Level of Significance after Mitigation		
	Alternative 1: Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development: Approval of Proposed Project	Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development	Alternatives 3 & 4: No Action on Either Site Suitability Determination or Proposed Project
may also result in substantial soil erosion and or be located on soil that is unstable.	hazards. **Alt Route 1B:** Same comment as above. **Jasper Substation Alt 1A:** The potential impacts of earthquake-related hazards on construction and operations for Substation 1A are considered moderate. Implementation of identified mitigation measures, as further detailed in Section 3.7 *Geology, Seismicity, and Soil Resources,* would minimize impacts to such resources and address potential hazards. **Jasper Substation Alt 1B:** Same comment as above.		
Hydrology & Water Quality			
Construction of the wind energy generation facility may alter existing drainage patterns.	Proposed Project structures could alter existing drainage patterns during construction and operation; however, implementation and compliance with regulations and BMPs, as further detailed in Section 3.8 *Hydrology and Water Quality,* would reduce potential impacts to hydrology and water quality. **Alt Route 1A**: The proposed access road could alter existing drainage patterns, which, in turn, may pose impacts to water quality. However, with implementation of BMPs, as further detailed in Section 3.8 *Hydrology and Water Quality,* water quality impacts would be minimized or avoided. **Alt Route 1B:** Same comment as above. **Jasper Substation Alt 1:** The substation could alter existing drainage patterns, causing erosion and sediment impacts within the area surrounding the structure. However, with implementation of mitigation measures and BMPs, as further detailed in Section 3.8 *Hydrology and Water Quality,* erosion and sediment impacts would be minimized or avoided. **Jasper Substation Alt 2:** Same comment as above.	No mitigation required. No change to existing conditions. However, future proposed Wind Development Projects could potentially exceed water quality standards.	No mitigation required. No impact. No change to existing conditions.
Land Use & Planning			
Construction of the wind energy generation facility may conflict with applicable land use plans.	The Project requires an amendment to the CDCA Plan to determine site suitability, as well as a CUP from the County. Compliance with conditions of approval and other environmental resource BMPs and mitigation measures further detailed in Section 3.9 *Land Use and Planning* would minimize impacts to other affected land uses. **Alt Route 1A**: The beginning of this route is located within the BLM Area of Critical Environmental Concern (ACEC); however, no suitable habitat was found. Therefore, minimal impacts are anticipated. Impacts to the ACEC would be addressed by implementation of mitigation measure MMBIO37 and other applicable mitigation measures included and discussed in Section 3.4 *Biological Resources*. **Alt Route 1B:** Suitable habitat exists along this route. Therefore, impacts to the ACEC may occur. These would be reduced with implementation of mitigation measure MMBIO37 and other applicable mitigation measures included and	No mitigation required. No change to existing conditions.	No mitigation required. No impact. No change to existing conditions.

Topics / Impacts	Impacts Summary and CEQA Level of Significance after Mitigation		
	Alternative 1: Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development: Approval of Proposed Project	Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development	Alternatives 3 & 4: No Action on Either Site Suitability Determination or Proposed Project
	discussed in Section 3.4 *Biological Resources*. **Jasper Substation Alt 1A:** Substation 1A is not located within an ACEC and is consistent with all applicable plans and land uses. Substation 1A would implement Southern California Edison (SCE) BMPs. **Jasper Substation Alt 1B:** Same comment as above.		
Recreation			
Construction of the wind energy generation facility may interfere with or diminish existing recreational opportunities in the area.	Implementation of this alternative is not expected to affect recreational use of the land during operation. Recreational access will be reduced during construction. **Alt Route 1A**: There are no long-term impacts to designated trails. Use of the proposed access road for construction and maintenance of the Proposed Project may affect designated trail use intermittently. Implementation of mitigation measures would further reduce temporary impacts. **Alt Route 1B:** Same comment as above. **Jasper Substation Alt 1A:** Approximately ten acres of land would no longer be available for casual recreational use. **Jasper Substation Alt 1B:** Same comment as above.	No mitigation required. No change to existing conditions.	No mitigation required. No impact. No change to existing conditions.
Socioeconomics			
The Proposed Project may affect the local economy.	Over the life of the Proposed Project, permanent jobs would be provided, as well as tax revenues to the local, regional, and state economy. Taxes paid annually would be beneficial to the local communities and would help sustain public services, providing residents with long-term benefits. **Alt Route 1A & 1B:** Same comment as above **Jasper Substation Alt 1A & 1B:** Same comment as above	No mitigation required. No change to existing conditions	No mitigation required. No impact. No change to existing conditions.
Environmental Justice			
The Proposed Project would not adversely impact low-income and/or minority populations.	The percentage of low-income and minority persons within the Project area do not exceed the County average. Therefore, environmental justice impacts related to Project development, including its proposed alternative access roads and Jasper substation locations, are not anticipated. **Alt Route 1A & 1B:** Same comment as above**.** **Jasper Substation Alt 1A & 1B:** Same comment as above.	No mitigation required. No change to existing conditions	No mitigation required. No impact. No change to existing conditions.
Transportation Systems and Facilities			
The Proposed Project may increase existing traffic and/or exceed the level of service standards	The Proposed Project would slightly increase traffic on SR-247 above existing levels during construction and operation; however, Level of Service (LOS) standards for this roadway would be within acceptable levels. Construction impacts would be minimized with implementation of BMPs and mitigation measures included and discussed in Section 3.13 *Transportation Systems and Facilities*.	No mitigation required. No change to existing conditions.	No mitigation required. No impact. No change to existing conditions.

Topics / Impacts	Impacts Summary and CEQA Level of Significance after Mitigation		
	Alternative 1: Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development: Approval of Proposed Project	Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development	Alternatives 3 & 4: No Action on Either Site Suitability Determination or Proposed Project
established by the County.	**Alt Route 1A**: This private access road is anticipated to be used for construction and Project maintenance purposes only. No substantial increase in use of adjacent public roadways is anticipated. With implementation of mitigation measures included and discussed in Section 3.13 *Transportation Systems and Facilities*, construction and operational impacts to adjacent public roadways would be minimized or avoided. **Alt Route 1B:** Same comment as above**.** **Jasper Substation Alt 1A:** Minimal construction and operational impacts are anticipated to public roadways as a result of the proposed substation at this location. With implementation of mitigation measures included and discussed in Section 3.13 *Transportation Systems and Facilities*, any construction or operational impacts to public roadways would be minimized or avoided. **Jasper Substation Alt 1B:** Same comment as above**.**		
Utilities and Services Systems			
The Proposed Project may result in the construction of new utilities and service systems in an area where these services do not exist, the construction of which could cause environmental effects.	A new septic system and internal electrical and communication lines are required for operation of the Proposed Project. Adequate capacity exists on the current transmission line for this Project. However, the transmission line does not have sufficient capacity for future generation projects. Implementation of mitigation measures and BMPs included and discussed in Section 3.14 *Utilities and Service Systems* would ensure that impacts to solid waste and utilities are minimized or avoided. **Alt Route 1A**: No utilities and services systems would be impacted. **Alt Route 1B:** Same comment as above**.** **Jasper Substation Alt 1A:** Same comment as above. **Jasper Substation Alt 1B:** Same comment as above**.**	No mitigation required. No change to existing conditions.	No mitigation required. No impact. No change to existing conditions.
Hazards and Hazardous Materials			
The Proposed Project may create a potential hazard to the public or environment through the transport or through accident conditions involving the release of hazardous materials.	All production, use, storage, transport, and disposal of hazardous materials associated with construction and operation of the Project would be in strict accordance with state and federal regulations. The Project area may be located within an MTR corridor, but no issues have been identified for structures fewer than 500 feet in height. Thus, no potential adverse impacts to navigable military airspace are expected. In addition, implementation of BLM BMPs included and discussed in Section 3.15 *Hazards and Hazardous Materials* would further reduce or avoid potential impacts. **Alt Route 1A**: Access Route 1A would also be consistent with BLM's emergency response plan for the Project area and would comply with the Project-specific public health and safety plan. Minimal hazardous materials would be used or stored on site for the construction of the route; impacts to public health and safety would be minimal or are not anticipated.	No mitigation required. No change to existing conditions.	No mitigation required. No impact. No change to existing conditions.

Topics / Impacts	Impacts Summary and CEQA Level of Significance after Mitigation		
	Alternative 1: Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development: Approval of Proposed Project	Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development	Alternatives 3 & 4: No Action on Either Site Suitability Determination or Proposed Project
	Alt Route 1B: Same comment as above**.** **Jasper Substation Alt 1:** Minimal hazardous materials would be used or stored on site for the construction of the substation. Substation 1A would also be consistent with BLM's emergency response plan for the Project area and would comply with the Project-specific public health and safety plan. Implementation of BLM BMPs included and discussed in Section 3.15 *Hazards and Hazardous Materials* would further reduce or avoid potential impacts. **Jasper Substation Alt 2:** Same comment as above**.**		
Paleontological Resources			
Directly or indirectly destroy unique paleontological resources or unique geologic features.	Construction and operation of the Proposed Project may impact paleontological resources in the Project site. Implementation of mitigation measures and BMPs included and discussed in Section 3.16 *Paleontological Resources* would minimize or avoid impacts to paleontological resources. **Alt Route 1A**: No impacts to paleontological resources are anticipated from the construction and operation of the route at this proposed location. **Alt Route 1B:** Impacts to paleontological resources may occur from construction and operation of the proposed route at this location. With implementation of mitigation measures included and discussed in Section 3.16 *Paleontological Resources,* construction and operational impacts to paleontological resources would be minimized or avoided. **Jasper Substation 1A:** There is a low potential for impacts to paleontological resources with construction and operation of the proposed substation at this location. Mitigation measures included and discussed in Section 3.16 *Paleontological Resources* would be implemented to minimize or avoid impacts to paleontological resources. **Jasper Substation 1B:** Same comment as above**.**	No mitigation required. No change to existing conditions. However, future proposed Wind Development Projects could potentially have an adverse effect on unknown paleontological resources.	No mitigation required. No impact. No change to existing conditions.

This page intentionally left blank.

Granite Wind, LLC (Granite Wind), a wholly owned subsidiary of Renewable Energy Systems Americas (RES), proposes to construct the Granite Mountain Wind Energy Project (the Proposed Project), which would be located approximately 6 miles east of Apple Valley in San Bernardino County, California (Figure 1-1, *Vicinity Map*). The Proposed Project would be located partially on private lands and partially on lands administered by the Bureau of Land Management (BLM).

1.1 BACKGROUND

The BLM Barstow Field Office and San Bernardino County (the County), California, jointly prepared this Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR) to serve the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) for the Proposed Project and alternatives. The DEIS/EIR analyzes the environmental effects and impacts of the Proposed Project and alternatives and addresses issues raised during public and agency scoping and development of technical studies. It has been prepared in accordance with NEPA, United States Code (USC), Title 42, Section 4321 et seq.; the Council on Environmental Quality's (CEQ's) implementing regulations for NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508); the CEQA statute, Public Resources Code Section 21000 et seq.; and State CEQA Guidelines, Title 14, California Code of Regulations Section 15000 et seq., as amended. The DEIS/EIR also complies with the County guidelines for CEQA implementation and BLM's NEPA guidelines.

This DEIS/EIR is intended to inform decision-makers, other responsible or interested agencies, and the general public of the potential environmental effects and impacts of the Proposed Project and alternatives. The DEIS/EIR would enable approving officials to evaluate the Proposed Project in terms of its environmental consequences, to examine and implement methods of eliminating or reducing any adverse impacts, and to consider Project alternatives. In arriving at a decision whether to proceed with the Proposed Project or an alternative to the Proposed Project, the BLM and the County would consider public input, potential environmental impacts and alternatives discussed in the DEIS/EIR, and other pertinent considerations.

1.2 TIERED ANALYSIS

This DEIS/EIR is tiered to the Wind Energy Programmatic EIS (PEIS) approved in December 2005 for implementation of a Wind Energy Development Program and is consistent with the decisions of that document. The PEIS's objectives were to:

1. Assess the environmental, social, and economic impacts associated with wind energy development on BLM-administered lands.
2. Evaluate a number of alternatives to address the question of whether the proposed action presents the best management approach for the BLM to adopt, in terms of mitigating potential impacts and facilitating wind energy development.

The scope of the PEIS analysis included an assessment of the positive and negative environmental, social, and economic impacts; discussion of relevant mitigation measures to address these impacts; and identification of appropriate programmatic policies and best management practices (BMPs) to be included in the proposed Wind Energy Development Program. The scope includes all BLM-administered lands in the western United States, excluding Alaska. They are located in 11 states: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. A maximum

potential development scenario was developed to help define the potential magnitude of future wind energy development activities on BLM-administered lands within these states. Additional modeling was conducted to consider the impact of various economic factors affecting wind energy development and to define how much wind power might be generated over the next 20 years in the 11-state study area.

In terms of mitigating adverse environmental impacts, on the basis of the analysis in the PEIS, the BLM approved policies that identify specific lands on which wind energy development would not be allowed or would be avoided if feasible; established requirements for public involvement, for consultation with other federal and state agencies, and for government-to-government consultation; defined the need for project-level environmental review; established requirements for the scope and content of the project Plan of Development (POD); and incorporated adaptive management strategies.

BMPs were adopted in the PEIS that established environmentally sound and economically feasible mechanisms to protect and enhance natural and cultural resources. These BMPs identified the issues and concerns that must be addressed by project-specific plans, programs, and stipulations during each phase of development; identified mitigation measures protecting various resources that must be incorporated into project PODs; and required incorporation of specific programmatic BMPs as well as additional mitigation measures contained in other, existing, and relevant BLM guidance, or developed to address site-specific or species-specific concerns. While the BLM amended certain land use plans on the basis of the analysis in the PEIS, the California Desert Conservation Act (CDCA) Plan, although included in the scope of analysis in the PEIS, was not amended at that time.

Since the Record of Decision (ROD) for the PEIS was signed in 2005, the BLM has developed additional guidance clarifying the approved policies for implementation of the wind program. BLM's intent is that implementation of these policies would ensure that potential adverse impacts to most of the natural and cultural resources present at wind energy development sites, except wildlife and visual resources, would be minimal to negligible. Potential impacts to wildlife would be reduced by the application of the programmatic BMPs and by the requirement that site-specific and species-specific concerns be addressed comprehensively at the project level. Similarly, BMPs would reduce potential impacts to visual resources, although the degree to which this could be achieved would be site-specific. These policies include a requirement that the public be involved in and informed regarding potential visual impacts of a specific project during the project approval process. Minimum requirements regarding project design are incorporated into individual project plans. Ultimately, determinations regarding the magnitude of potential visual impacts are made by local stakeholders on a project-by-project basis.

As a programmatic evaluation, the PEIS does not evaluate site-specific issues associated with individual wind energy development projects such as the Granite Mountain Wind Energy Project. Location-specific factors (e.g., soil type, watershed, habitat, vegetation, viewshed, public sentiment, the presence of threatened and endangered species, and the presence of cultural resources, and project size and design) greatly determine the magnitude of the impacts from given projects and therefore are addressed in this tiered, project-specific environmental document. While the PEIS did not specifically address greenhouse gases (GHGs) in its air quality analysis and new guidance on addressing this issue has since been promulgated at both the federal and state level, the GHG emissions related to wind energy projects may be adequately addressed in a project-specific tiered environmental document.

Based on the Departmental tiering guidance outlined in 43 CFR 46.140, two issues led to the decision to develop a tiered project-specific EIS rather than a tiered project-specific Environmental Assessment (EA) for the Granite Mountain Wind Energy Project. The first of these issues is local concern about the magnitude of the Project's visual impacts. The second, and a somewhat related issue, is the cumulative effect of current and reasonably foreseeable wind energy projects considered in conjunction with solar energy projects proposed or reasonably foreseeable within the vicinity of the Granite Mountain Wind Energy Project.

The PEIS analyzed the cumulative effects for wind energy development across the lands in the 11 states and projected a total long-term footprint for wind projects in California at 7,230 acres. The unique qualities of the Mojave Desert and other Southern California deserts that have superb solar energy potential as well as areas of good or better wind potential, along with new policies and incentives approved in 2005 and subsequent years, have resulted in a level of potential solar development that was not anticipated in 2005 and was therefore not addressed in the PEIS. Together, projects for these two renewable energy sources potentially create an additional layer of cumulative land-use (footprint) effects in the Project area, and in Southern California overall, that may substantially exceed the footprint anticipated in the PEIS. These cumulative effects are potentially compounded because most sites appropriate for development of renewable resources in the Mojave Desert are located in habitat for the federally- and state-listed as threatened desert tortoise, and several of the sites are within critical habitat designated by the U.S. Fish and Wildlife Service (USFWS) for the species.

Although these particular cumulative and project-specific issues were not addressed in the PEIS, the policies adopted on the basis of the PEIS do provide a comprehensive approach for ensuring that potential adverse impacts are minimized to the greatest extent possible. In each chapter of the Granite Mountain Wind Energy Project DEIS/EIR, the components of the document that do tier to the PEIS will be summarized.

1.3 PROJECT SUMMARY

The Proposed Project would include the installation of up to 28 2.3-megawatt (MW) Siemens wind turbines (or a similar model of wind turbine between 2.1 MW and 3 MW in capacity) and ancillary facilities on a permanent Project footprint of approximately between 91.2 to 109.3 acres (Figure 1-2, *Project Site and Location of Turbines)*. The Proposed Project would collect and transfer the energy generated to an existing regional electrical transmission grid. At maximum capacity, the Proposed Project would produce between 58.8 and 84 MW of electricity, depending on the make and model of wind turbine used. The Proposed Project is anticipated to produce approximately 185,000 megawatt-hours (MWh) of electricity per year. The Proposed Project could potentially provide enough electricity annually to serve approximately 10,000 industrial and commercial electricity customers or approximately 77,093 residential customers at current levels of per capita use.[1]

For the proposed Siemens wind turbine, the towers would be approximately 80 meters (262 feet) tall (hub height) above existing grade. The blades of the proposed turbines would

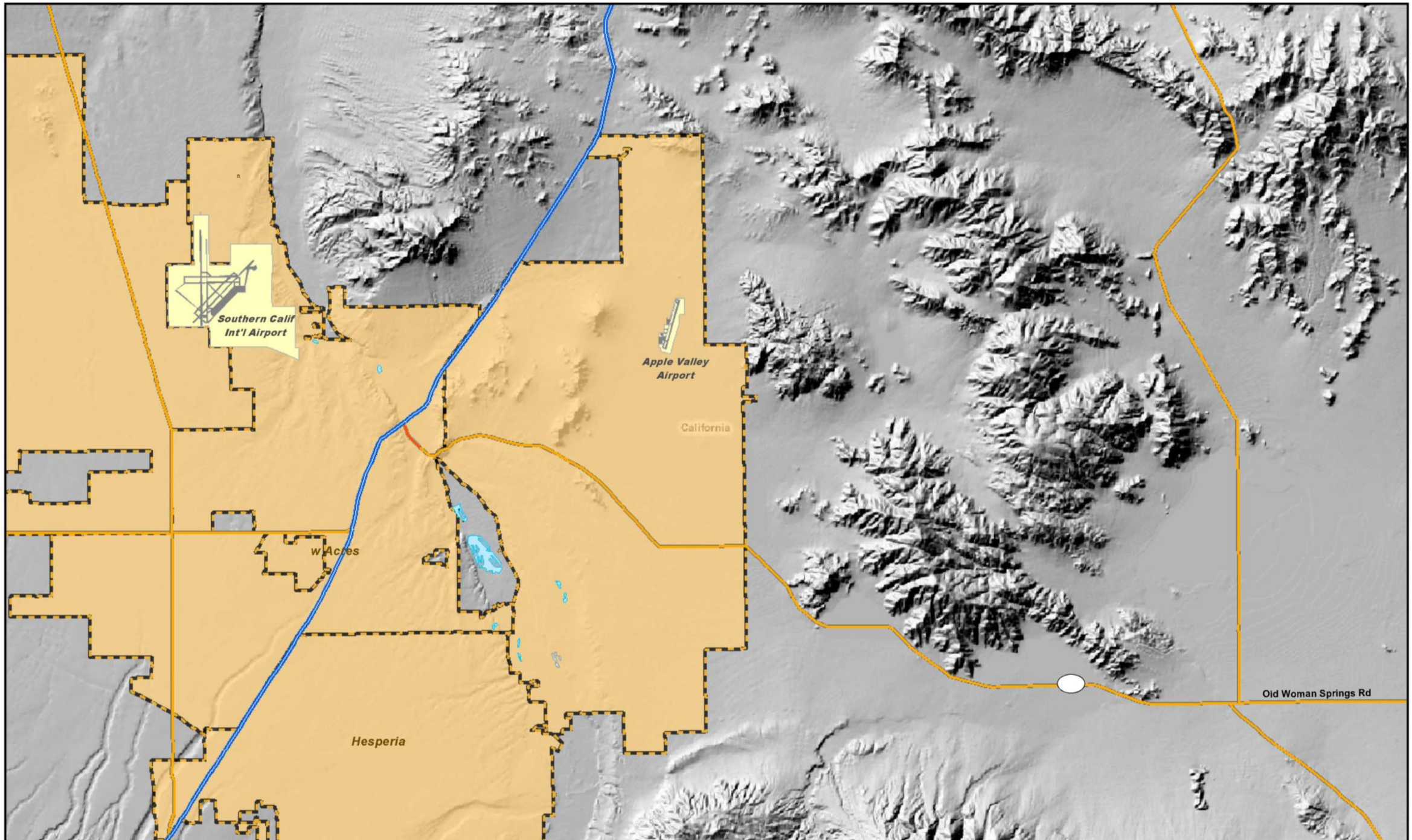
[1] California residents used 2,400 kilowatts per year (kWh/yr); industrial and commercial customers used approximately 7,000 kWh/yr of electricity in 2006. In 2006, Californian residential consumption totaled 85,610 gigawatts per hour GWh for a total population of 36 million people, which when divided equals 2,400 kWh per person/yr (California Energy Commission, 2009, U.S. Census 2000).

extend an additional 50.5 meters (166 feet) above the hub, for a total tip height of 130.5 meters (428 feet) above existing grade (see Figure 1-3, *Conceptual Wind Generating Turbine*).

Twenty wind turbines are proposed to be located on federal lands administered by the BLM, and eight wind turbines are proposed to be located on leased private lands that are immediately adjacent. The Proposed Project would also require the construction of a new access road, Project substation, overhead transmission line, interconnection to the Southern California Edison (SCE) 220-kilovolt (kV) transmission system (Jasper Substation), and an operations and maintenance (O&M) building. Temporary facilities associated with construction include a construction office, on-site concrete batch and gravel crushing plants, and materials staging and assembly areas. Each wind turbine would have a pad-mounted transformer located beside the wind turbine tower. A maintenance road and an underground electrical and communication line will connect each wind turbine generator (WTG). Two permanent meteorological towers would be installed to measure wind speed and direction across the site.

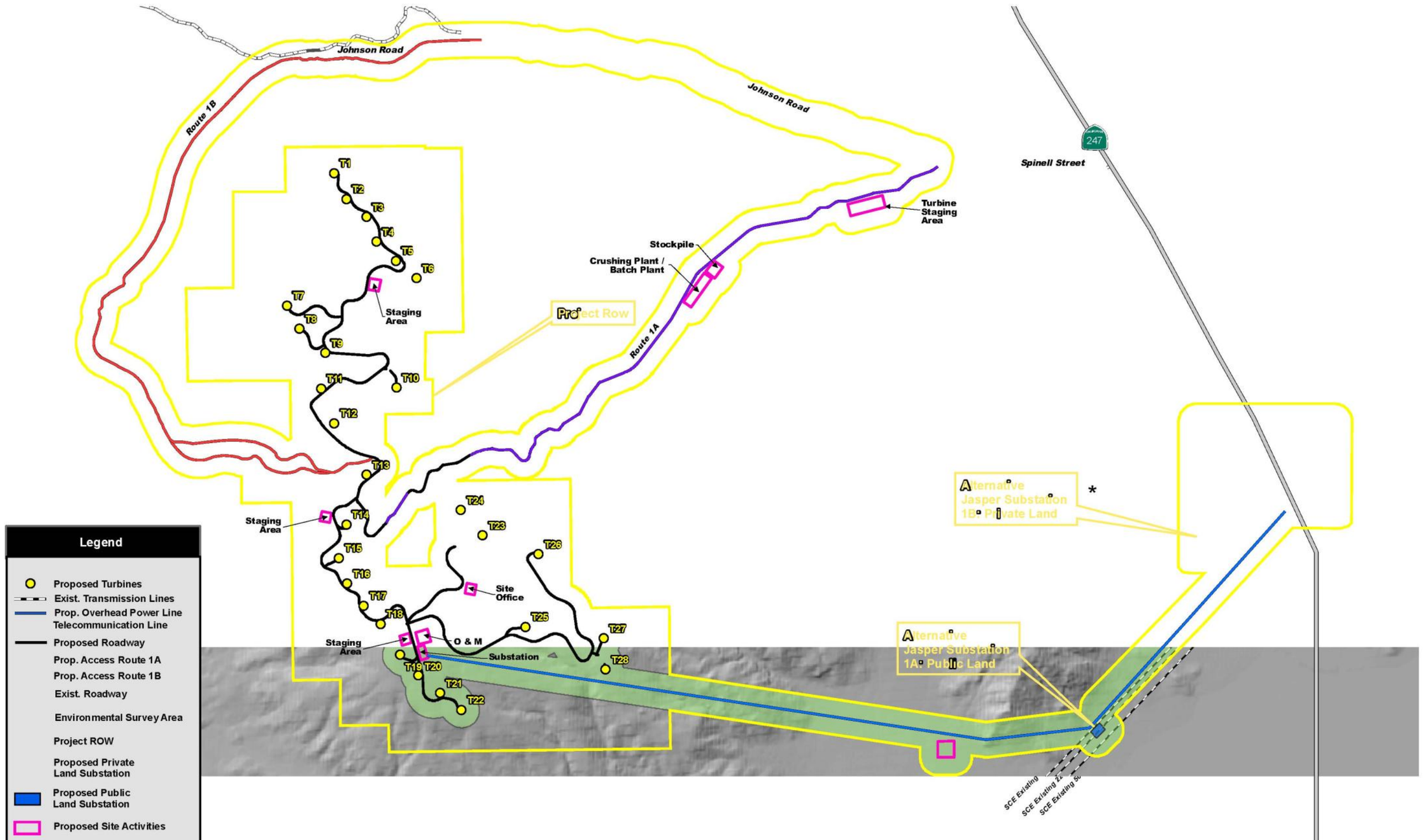
Granite Wind has proposed that the main access road to the site be built off of State Route (SR) 247 to the east of the site and that their transmission line would connect to the SCE grid southeast of the site at the proposed SCE Jasper Substation, on the west side of SR 247. The wind turbines are proposed for locations that maximize energy production from the Project area.

The Proposed Project is expected to have an operating lifetime of 30 years. At or near that time, the applicant would determine if the operational life of the Project could be extended, the Project should be repowered with new wind turbines, or the Project should be decommissioned. Should the Project's operational life be extended or the Project is repowered, the applicant would work with the BLM and County to ensure the appropriate environmental reviews were conducted at that time. The goal of Project decommissioning would be to remove the installed power generation equipment and return the site to a condition as close to a pre-construction state as feasible.



GRANITE MOUNTAIN WIND ENERGY PROJECT
VICINITY MAP

Figure 1-1

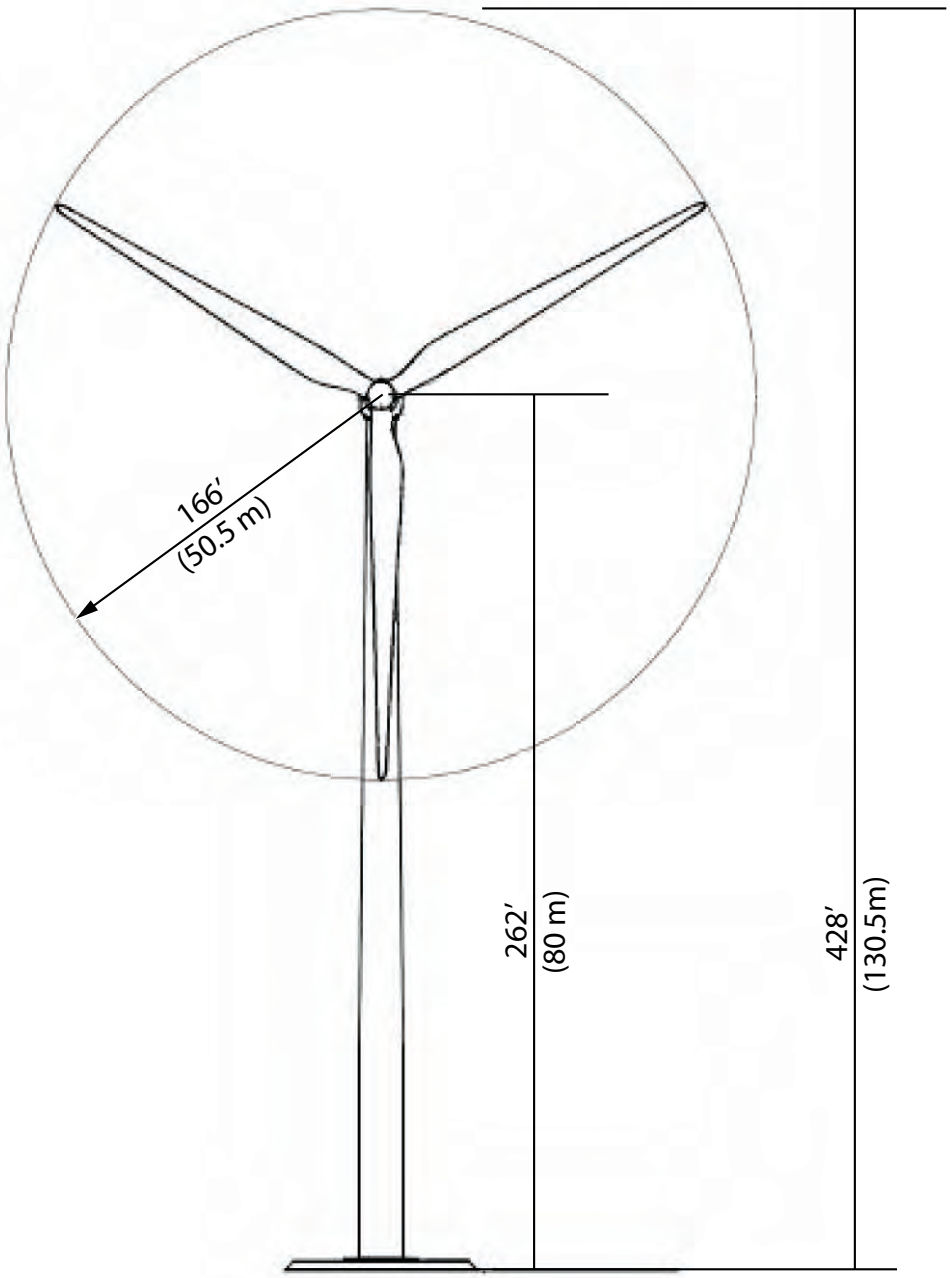


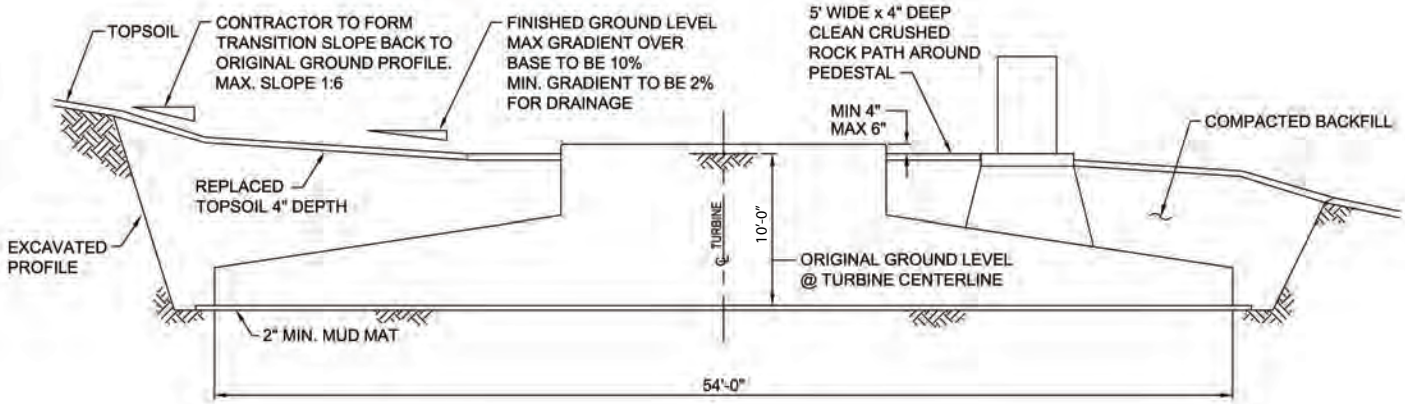
Sources: Southern California Edison, Granite Mountain Wind Energy Project Plan of Development 2009

* Area in which the proposed substation would be located

GRANITE MOUNTAIN WIND ENERGY PROJECT
PROJECT SITE AND LOCATION OF TURBINES

Figure 1-2





GRANITE MOUNTAIN WIND ENERGY PROJECT
CONCEPTUAL WIND GENERATING TURBINE

Figure 1-3

This page intentionally left blank.

1.4 CONTENT AND FORMAT OF DEIS/EIR

This DEIS/EIR follows the most recent guidelines for implementing NEPA and CEQA and provides the following:

Executive Summary: Provides a brief summary of the proposed actions, the environmental consequences associated with the proposed action and alternatives, and the level of significance after implementation of mitigation measures.

Chapter 1, Introduction: Provides an introduction to the Proposed Project, its purpose and need, and the NEPA/CEQA process.

Chapter 2, Proposed Action and Alternatives: Presents details of the proposed action, including its sub-alternatives for locations of the access route and substation; an alternative action in which the site is determined to be unsuitable for wind energy development; and two no action alternatives, one in which no suitability determination is made (determination deferred) and the other in which the site is determined suitable for wind energy generation.

Chapter 3, Affected Environment, Environmental Consequences, and Mitigation Measures: Examines current baseline conditions and the Proposed Project's impacts to air quality; visual resource; biological resources; noise resources; cultural resources; geology, seismicity, and soil resources; hydrology and water quality; land use and planning; recreation; socioeconomics; environmental justice; transportation systems and facilities; utilities and service systems; hazards and hazardous materials; and paleontological resources. For each resource section, there is a separate subsection on impact criteria; regulatory setting; affected environment; environmental consequences for the proposed action, including sub-options and other alternatives; and mitigation measures and residual impacts after mitigation.

Chapter 4, CEQA-Specific Requirements & Findings of Significance: Addresses specific topics required by CEQA, including CEQA Thresholds of Significance, Effects Found Not to Be Significant under CEQA, CEQA Significant Effects That Cannot be Avoided, and CEQA Cumulative Effects.

Chapter 5, Consultation & Coordination: Provides an overview of key tribal and agency consultation activities and public outreach activities that have occurred to date and that are anticipated, a list of agencies and organizations consulted during preparation of the DEIS/EIR, and the names and qualifications of those primarily responsible for preparing it. A summary of the scoping issues is also included.

References: Provides a comprehensive list of all technical documents prepared specifically for the Proposed Project and other documents that were consulted in preparing the DEIS/EIR. Project-specific technical reports prepared for the Proposed Project include an Air Quality Analysis, Visual impact Analysis, Biological Studies and Surveys, and Cultural Report. Other documents included are a mitigation measure summary and a land use consistency table.

1.5 PURPOSE AND NEED - NEPA

The BLM's purpose and need for the Granite Mountain Wind Energy Project is in response to Granite Wind, LLC's application under Title V of the Federal Land Policy and Management Act (FLPMA) (43 USC 1761) for authorization of a right-of-way (ROW) on BLM-managed lands to construct, operate, and decommission a wind energy facility and

associated infrastructure in compliance with FLPMA, BLM ROW regulations, and other applicable federal laws. The BLM will decide whether to approve, approve with modification, or deny issuance of a ROW authorization to Granite Wind, LLC for the proposed Granite Mountain Wind Energy Project.

The purpose and need evaluated in this DEIS/EIR tiers from the BLM's policy mandate, articulated in BLM's Wind Energy PEIS (BLM, 2005), to promote environmentally responsible renewable energy development on public lands in appropriate locations.

Additional electrical generation is needed to meet energy demands for local and regional customers in Southern California. This has been documented in the California Energy Commission's (CEC's) California Energy Demand 2006-2016 projections.

In addition, existing roads are not suitable for vehicular access to or around the Project site. Thus, site access would also be analyzed and, if the Proposed Project is approved or approved with modification, any new or existing roads required for construction, operation, or decommissioning of the Proposed Project would be designated as either open, limited, or closed to off-road vehicles, consistent with criteria established in 43 CFR 8342.1.

BLM's actions would also include concurrent consideration of amending the CDCA Plan of 1980, the land use plan for public lands that covers the area where the Proposed Project is proposed. The land use plan amendment would propose the site as a suitable location of wind energy development. The land-use planning decision that the BLM would make is whether to amend the CDCA Plan and, if so, whether the Project area provides an environmentally suitable or an environmentally unsuitable location for a utility-scale wind energy facility. This action responds to federal and state laws and policies promoting the use of public lands for environmentally responsible renewable energy development.

The Proposed Project also includes facilities on private lands under the jurisdiction of San Bernardino County. The County's purpose and need is to respond to Granite Wind LLC's application for a conditional use permit (CUP) to construct, operate, and decommission a wind energy facility and associated infrastructure in compliance with applicable state laws. The decision that the County would make is whether or not to grant a CUP for facilities on private lands and, if so, under what terms and conditions.

Federal Executive Order 13212 requires all federal agencies to streamline their internal processes for approving energy-related projects. The Energy Policy Act of 2005 directs the Department of the Interior, of which the BLM is a part, to take actions to promote the environmentally responsible development of domestic renewable energy supplies. More specifically, BLM's wind energy development policies include the Wind Energy Development PEIS (BLM, 2005) and BLM Instruction Memorandum 2009-043 (BLM 2008). These policies established targets for increased renewable energy generation, including from wind energy facilities.

The applicant, Granite Wind, is considering an application to the Department of Energy (DOE) for a loan guarantee under Title XVII of the Energy Policy Act, as amended by Section 406 of the American Recovery and reinvestment Act of 2009, P.L. 111-5. Should DOE decide to enter into negotiation of a possible loan guarantee with Granite Wind, DOE would become a cooperating agency in developing the Final EIS/EIR. The purpose and need for action by DOE is to comply with its mandate under the Energy Policy Act by selecting eligible projects that meet the goals of the Act.

1.6 PROJECT OBJECTIVES - CEQA

A clear statement of Project objectives allows for the analysis of reasonable alternatives to the Proposed Project. The overall intent of the Proposed Project is to promote the use of environmentally responsible renewable energy to provide energy to local and statewide utility customers.

The following objectives reflect the development goals of the Proposed Project:

- Provide energy from the Proposed Project to help meet California's RPS requirement for renewable energy.
- Take advantage of the Production Tax Credit, which would help subsidize the cost of producing wind-generated electricity and make it more competitive with non-renewable energy generation.
- Develop a wind energy project on the windiest sites available to maximize energy production and provide the lowest-cost renewable, non-polluting electricity.
- Incorporate the BLM's BMPs, which are the best set of practices for developing wind energy and ensuring minimal environmental impacts.

In 2006, the State of California passed the California Global Warming Solutions Act (Assembly Bill 32), which requires the state to reduce emissions of carbon dioxide (CO_2) and other GHGs to 1990 emission levels (a 25 percent reduction) by 2020. Senate Bill 1368 was enacted in 2006, which prohibits California electric utilities from constructing power plants or entering into long-term energy purchase contracts with facilities that do not meet the GHG emissions standard.

The California Renewable Portfolio Standard legislation established in 2002 (Senate Bill 1078) and accelerated in 2006 (Senate Bill 107) requires retail sellers of electricity to obtain 20 percent of their supply of electricity from renewable energy sources by 2010 and 33 percent of electricity from renewable energy sources by 2020. The Proposed Project would contribute toward meeting the California Renewable Portfolio Standard and GHG emissions legislation while satisfying increased demand for electricity.

The San Bernardino County General Plan establishes goals for renewable energy for the County. As an example, Conservation Element Policy CO 4.12 states that the County shall promote siting of renewable energy resources. Conservation Element Goal CO 8 is to minimize energy consumption and promote safe energy extraction, uses, and systems to benefit local, regional, and global environmental goals. Policies under this goal include, Policy CO 8.3, which states that the County would assist in efforts to develop alternative energy technologies that have minimum adverse effect on the environment and explore and promote newer opportunities for the use of alternative energy sources.

The Proposed Project would contribute toward meeting national targets for renewable energy production on public lands and the renewable source targets for retail sellers of electricity in California, consistent with the state's GHG emissions standards. The Proposed Project would also be consistent with County goals and policies regarding renewable energy.

1.7 COMPLIANCE WITH OTHER APPLICABLE FEDERAL AND STATE LAWS, STATUTES, REGULATIONS, EXECUTIVE ORDERS, AND PLANS

This Proposed Project requires one or more ROW for wind energy and support facilities, such as transmission lines and connections, and access to BLM-administered lands and supporting permits from other agencies. BLM's ROW provisions arise from the Federal Land Policy and Management Act of 1976 (FLPMA) and associated regulations at 43 CFR 2800 et. seq. Since 2007, ROW applications have been received for the various aspects of the Proposed Project. These ROW applications are under review by the BLM, pending this DEIS/EIR and subsequent decisions by the BLM Authorized Officer. FLPMA ROW authorizations include certain standard measures for monitoring, compliance, and reporting during construction, operation, and maintenance and decommissioning; please see Appendix P for detailed requirements that would be incorporated into any ROW authorized for the Project.

The Proposed Project also requires the issuance of a CUP from the County, for which Granite Wind, LLC applied in October 2007. This application is being reviewed by the County, pending appropriate environmental documentation.

Other permits that are anticipated from federal, state, or local agencies include the following:

Table 1-1: Agency Roles and Potential Permit/Approvals

AGENCY NAME	PERMIT/APPROVAL/COORDINATION ROLE
Federal Agencies	
Bureau of Land Management	Lead Agency for NEPA Documentation Preparation
	ROW Authorization
	Clean Air Act Conformity
Environmental Protection Agency	NEPA Review
	Section 404 Clean Water Act Review
	Section 309 Clean Air Act Review
U.S. Fish and Wildlife Service	Endangered Species Act Section 7 Consultation
U.S. Army Corps of Engineers	Clean Water Act, Section 404 Nationwide Permit 12
Federal Aviation Administration	Aviation Hazard Clearance; Approval of Lighting Plan
Department of Defense/Homeland Security	Consultation Regarding Military Air Space
Department of Energy	NEPA Review
State Agencies	
California Air Resource Board	Air Quality Compliance
Mojave Desert Air Quality Management District	Permits to Construct and Operate
Lahontan Regional Water Quality Control Board	Porter Cologne Water Quality Act, Clean Water Act, National Pollutant Discharge Elimination System Permit
Colorado River Basin Regional Water Quality Control Board	Porter Cologne Water Quality Act, Clean Water Act, National Pollutant Discharge Elimination System Permit
California Department of Fish and Game	Section 1600, Streambed Alteration Agreement; State Endangered Species Consultation
State Historic Preservation Office	National Historic Preservation Act Section 106 Consultation
California Public Utility Commission (through Southern California Edison)	Interconnect Approval
California Department of Transportation	Transportation Permits for Hauling Explosives and Oversized Loads

AGENCY NAME	PERMIT/APPROVAL/COORDINATION ROLE
Local Agencies	
County of San Bernardino	CEQA Review
	Grading Permit, Building Permit
	Conditional Use Permit, Major Variance from Height Ordinance
	County Road Encroachment Permit

NEPA and CEQA require compliance with other applicable federal and state laws, such as those for the protection of listed and sensitive biological species and habitats, eligible and listed archaeological and historic sites, water and air quality, scenic quality, noise, and those requirements related to the human environment.

1.7.1 NEPA/CEQA Joint Process

This section describes the process for preparation of documentation designed to meet the requirements of both NEPA and CEQA. The involvement of a federal and a local agency requires compliance with both NEPA and CEQA to obtain permits necessary for construction. Federal regulations implementing NEPA (40 CFR 1500) urge cooperation and preparation of joint federal and state environmental documents. State regulations implementing CEQA (CEQA Guidelines Section 15222 and 15226) also strongly encourage cooperation with the lead federal agency in preparation of a joint environmental document. With joint documents, one document is prepared and circulated for public review to comply with both federal and state requirements for environmental impact assessment.

BLM and County staff initiated a formal EIS/EIR process with the publication of the NEPA Notice of Intent (NOI) in December 2007 and the CEQA Notice of Preparation (NOP) in February 2008. Public scoping and outreach are key components of the EIS/EIR process, and the information gathered from the public and agencies are incorporated into the consideration of alternatives and issues to be analyzed.

1.7.2 Bureau of Land Management

Management Plan Amendment Process

FLPMA designated the 25-million acre CDCA, within which the 10 million acres of public lands are managed in accordance with the CDCA Plan of 1980 (as amended), and specifically in accordance with the West Mojave amendment to the CDCA Plan, which serves as the resource management plan for this area (BLM, 2003). Both FLPMA and the CDCA Plan recognize that the CDCA would be managed for multiple uses, while protecting the environment. The CDCA Plan, in the Energy Production and Utilities Corridor Element discussion on Alternative Energy, recognized that renewable energy power plants, including wind energy facilities, may be appropriate within the CDCA. The 1980 plan designates two specific areas as suitable for wind energy facilities and stated that additional energy development area designations would be subject to applicable NEPA compliance and the planning process.

Therefore, an amendment to the CDCA Plan is proposed as part of BLM's proposed action, which is analyzed through this NEPA/CEQA compliance process (DEIS/EIR). This plan amendment would classify the Project area as suitable or unsuitable for wind energy facilities, a decision that was deferred until after the development of site-specific feasibility studies in the CDCA Plan. In addition, a plan amendment is proposed for the portion of the 220kV transmission line outside the designated utility corridor.

Right-of-Way Authorization

The applicant has requested a ROW authorization on Section 25 of Township 6 North, Range 2 West, and Sections 1, 12, 6, 7, and 8 of Township 5 North, Range 2 West, to construct and operate 20 new wind energy generation facilities, a new access road, an O&M building, and all other structures on public land. The term of the BLM ROW requested is 30 years to provide adequate time to develop and commission the Proposed Project, operate it for the minimum term of the power purchase agreement (20 years), and decommission and remove the Project structures. The Proposed Project also includes a linear ROW in Sections 7, 8, 9 or 15, 16, 17 of Township 5 North, Range 1 West, to allow for extension of overhead power lines, road access to the site, and construction of a new substation. Any ROW offered by BLM would encompass only those lands necessary for construction, operation, and decommissioning of the Project.

43 CFR 8342.1 Designation of Areas and Trails

Existing roads are not suitable for vehicular access to or around the Project site; thus, approximately 10.2 miles of new roads on BLM land (and 2.4 miles on private land) are proposed. The potential for environmental impacts from the proposed roads is analyzed in this DEIS/EIR. The proposed roads on public lands would be designated as limited to permitted use, consistent with criteria established in 43 CFR 8342.1.

1.7.3 San Bernardino County

County Development Code

To implement the General Plan, the County Development Code classifies and regulates the uses of land and structures within unincorporated county areas.

The Proposed Project is located within a Resource Conservation (RC) zone, which allows open space and recreational activities, single-family homes on very large parcels, and similar and compatible uses. The Proposed Project site is also located in an Energy Facilities (EN) Overlay under Section 82.01.020 (Land Use Plan and Land Use Zoning Districts) and 82.01.030 (Overlays), which established standards for commercial energy generation and transmission facilities within specified zoning districts, including the RC district. The EN Overlay ensures that the need for energy generation and transmission capacity is balanced with the health, safety, and welfare of the public, and that the development of such facilities provides a harmonious balance between the suitability of a project site with existing area land use and physical surroundings.

The Proposed Project is subject to the County's CUP process, which is the application process the County uses to review the proposed location and operation of certain land use types. The Proposed Project would have required a General Plan Amendment (Zone Change) to implement the EN Overlay. The EN Overlay was rescinded on February 23, 2010, with an effective date of March 23, 2010; thus, a General Plan Amendment is no longer required. Through the CUP process, the Proposed Project is evaluated for consistency with the County General Plan, County development standards, compatibility with surrounding land uses, availability of public services, and potential environmental impacts. As stated earlier, this process was initiated in 2007 and is under review by the County.

1.8 DECISION FRAMEWORK

1.8.1 Public Scoping

The public scoping process provided a mechanism for focusing and clarifying the issues to be addressed in the DEIS/EIR by actively obtaining input from the public and interested federal, state, tribal, and local agencies. Information received during scoping assisted BLM and the County in identifying potential environmental issues, impacts, Project alternatives, and mitigation measures associated with the Proposed Project. The NEPA scoping period for the EIS was initiated with the publication of an NOI in the *Federal Register* on December 6, 2007. The CEQA scoping period for the EIR was initiated with the filing/posting of the NOP on February 29, 2008. The NOI and NOP provided supplementary Project information, BLM and County contact information for commenting, and a list of the predominant issues.

Two public scoping meetings were held in Apple Valley: at Mojave Mesa Elementary School on March 18, 2008, and at Granite Hills High School on April 29, 2008. The NEPA and CEQA scoping period ended on May 5, 2008.

Major issue areas identified during public scoping included: aesthetics, noise, property values, biological resources, and land use.

Comments received during the scoping period are part of the Administrative Record for this DEIS/EIR. A scoping report, which is provided as Appendix C of this DEIS/EIR, organized the scoping input and identified the issues raised. The comments are summarized in Section 5.2, *Public Involvement,* and Table 5.3, *Summary of Key Issues,* which also identifies the corresponding DEIS/EIR section where the issues are addressed.

1.8.2 Tribal Consultation

To comply with Executive Orders regarding Government-to-Government relations with a tribal entity and other federal laws and regulations, formal and informal contacts were made during the planning process. BLM contacted the San Manuel Band of Mission Indians to initiate consultation and issue an invitation to participate as a cooperating agency in November 2007. The San Manuel Band of Mission Indians did not elect to assume cooperating agency status, but it has chosen to remain involved in the planning process. Section 5.3, *Tribal Consultation,* provides additional information.

1.8.3 Planning Issues

During Project development and the public scoping period, issues relating to the following environmental elements were identified and are evaluated in Chapter 3 of this document:

- Air Quality
- Visual Resources
- Biological Resources
- Noise
- Cultural Resources
- Geology, Seismicity, and Soil Resources
- Hydrology and Water Quality
- Land Use and Planning
- Recreation
- Socioeconomics
- Environmental Justice
- Transportation Systems and Facilities
- Utilities and Service Systems
- Hazards and Hazardous Materials
- Paleontological Resources

The impact analysis for most of these elements tiers to the programmatic analysis in the PEIS. Appropriate tiering language is included in various locations in the Chapter 3 discussion to satisfy NEPA tiering requirements, CEQA EIR requirements and, in particular, to identify the appropriate project-specific BMPs and other mitigation measures that have been incorporated. Additional NEPA analysis that was not included in the PEIS is required to address greenhouse gases (under Air Quality) and cumulative effects, as well as to address site-specific issues related to the project area, including visual impacts.

Other environmental issues were assessed and found to have minor or no direct effects from the Proposed Project or alternatives. These environmental elements are identified below in Table 1-2 and are not analyzed further in this DEIS/EIR.

Table 1.2: Planning Issues Not Analyzed Further

TOPICS/IMPACT	PROPOSED ACTION	AMENDMENT TO CDCA PLAN DETERMINES SITE IS UNSUITABLE FOR WIND ENERGY DEVELOPMENT	NO ACTION
Agricultural Resources	No impacts are anticipated. No prime, statewide important, unique, or local important farmlands or agricultural preserves are located on-site or on surrounding properties. Zoning and land use designations do not include agricultural uses. Therefore, the Proposed Action would not cause the loss of or convert the use of agricultural lands.	No impacts are anticipated. No wind energy development would occur on-site.	No impacts are anticipated. No development would occur on-site.
Mineral Resources	No impacts are anticipated. The Proposed Action is not located in an area of mineral resource significance. No mineral sites were delineated within the Project.	No impacts are anticipated. The area is not a significant area for mineral resources. No wind energy development would occur on site.	No impacts are anticipated. No development would occur on-site, which is not an area of mineral resource significance.
Public Services	Some impacts are anticipated. Generally, the construction contractor would develop an emergency action and safety plan, which would be coordinated with the police, fire, and medical services. There is the potential for an emergency response, which may include the evacuation of a person within the wind turbine at a height of 80 meters. Fire and medical services are discussed in Section 3.15, Hazards and Hazardous Materials. The Proposed Project does not involve residential development. Therefore, the Proposed Project would not impact libraries or schools.	No impacts are anticipated. No wind energy development would occur on-site. No impacts to public services are expected.	No impacts are anticipated. No development would occur on-site. No impacts to public services are expected.

2.1 STATUTORY AND REGULATORY REQUIREMENTS FOR ALTERNATIVES

2.1.1 NEPA Requirements

According to the CEQ's NEPA-implementing regulations (40 CFR 1502.14), an EIS should present the environmental impacts of the Proposed Action and all reasonable alternatives in comparative form, defining the issues and providing a clear basis for choice by decision-makers and the public. The CEQ has stated that "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" (CEQ, 1983). The alternatives section shall a) rigorously explore and objectively evaluate all reasonable alternatives, and, for alternatives that were eliminated from detailed study, briefly discuss the reasons for their elimination; b) devote substantial treatment to each alternative considered in detail, including the proposed action, so that reviewers may evaluate their comparative merits; c) include reasonable alternatives not within the jurisdiction of the lead agency; d) include the alternative of no action; e) identify the agency's preferred alternative(s), if one or more exists, in the draft statement and identify such alternative(s) in the final statement unless another law prohibits the expression of such a preference; and f) include appropriate mitigation measures not already included in the proposed action or alternatives.

Unlike CEQA, which permits the evaluation of alternatives to occur in less detail than is done for the proposed action, the CEQ regulations for implementing NEPA require the analysis of alternatives to occur at a substantially similar level of detail to that devoted to the proposed action (40 CFR 1502.14).

CEQ regulations provide guidance to reduce paperwork, including preparing analytic rather than encyclopedic EISs (§1502.2[a]) and discussing only briefly issues other than significant ones (§1502.2[b]), using program, policy, or plan EISs, and tiering from statements of broad scope to those of narrower scope, to eliminate repetitive discussions of the same issues (§1502.4 and §1502.20), incorporating by reference (§1502.21), and integrating NEPA requirements with other environmental review and consultation requirements (§1502.25). Therefore, this document is tiered from the PEIS, and policies and BMPs pertinent to this Project from the PEIS have been incorporated.

Wind Energy PEIS Tiering

On the basis of the analysis presented in the PEIS discussed in Chapter 1 of this document, which incorporated existing policies and BMPs and established additional comprehensive wind development policies,[2] the BLM established a framework for development of a wind energy development program. The expectation expressed in the PEIS, was that analyses supporting project-specific wind energy development projects would tier from the PEIS. The wind development policies included avoiding siting projects in sensitive locations including in designated areas that are part of the National Landscape Conservation System (e.g., Wilderness Areas, Wilderness Study Areas, National Monuments, NCAs except for the CDCA, Wild and Scenic Rivers, National Historic and Scenic Trails, and Areas of Critical Environmental Concern (ACECs). Except for ACECs, these areas were also excluded from the maximum potential development scenario analyzed in the PEIS. According to these

[2] Policies are defined in the Programmatic EIS as a plan of action. Policies adopted as part of the Wind Energy Development Program establish a system for the administration and management of wind energy development on BLM-administered lands.

policies, additional areas of land may be excluded from wind energy development on the basis of findings of resource impacts that cannot be mitigated and/or conflict with existing and planned multiple-use activities or land use plans. Also, to the extent possible, wind energy projects approved in accordance with these policies are to be developed in a manner that will not prevent other land uses, including minerals extraction, livestock grazing, recreational use, and other right-of-way uses.

In accordance with these policies, site and/or project-specific NEPA analyses tiering from the PEIS includes analyses of project site configuration and micro-siting considerations, monitoring program requirements, and appropriate mitigation measures. In particular, the mitigation measures discussed in Chapter 5 of the PEIS may be consulted in determining site-specific requirements.

2.1.2 CEQA Requirements

The guiding principles for the selection of alternatives for analysis in an EIR are provided by the State CEQA Guidelines (§15126.6). Section 15126.6 requires the discussion of "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." The discussion of alternatives under CEQA is intended to "focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly" (CEQA Guidelines 15126.6[b]).

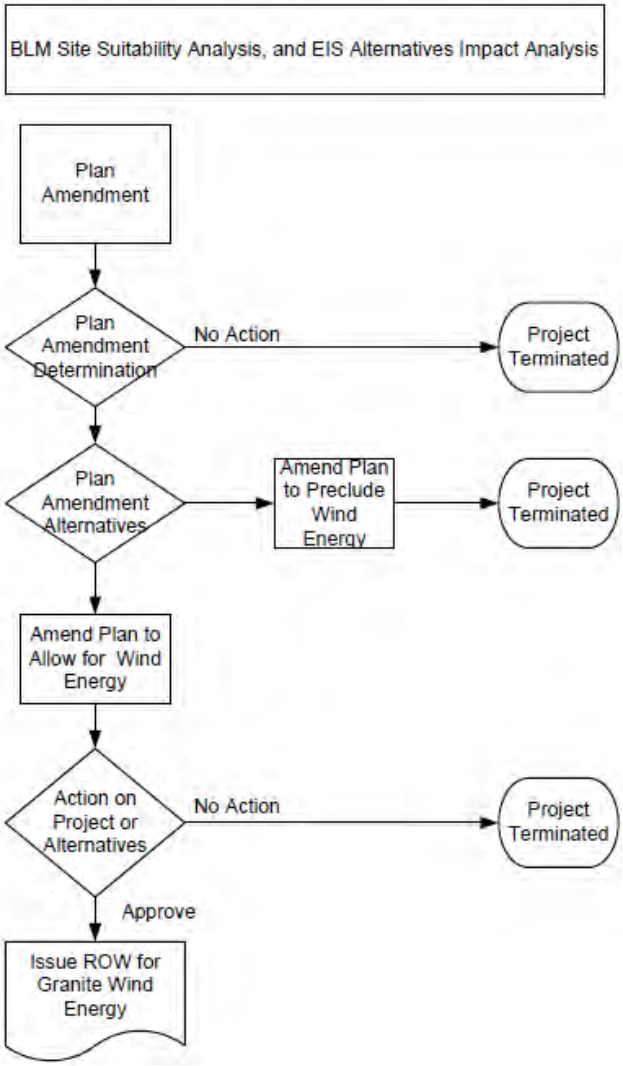
According to CEQA Guidelines 15126.6(f)(1), "among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site." For alternative locations, "only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR" (15126.6[f] [2] [A]).

The focus and definition of the alternatives evaluated in this DEIS/EIR is governed by the "rule of reason" in accordance with §15126.6(f) of the State CEQA Guidelines. That is, the range of alternatives presented is limited to those that would permit a reasoned choice by the decision-makers.

2.2 ALTERNATIVES EVALUATED IN THIS DEIS/EIR

The BLM managed lands where the Proposed Project is located, is subject to the California Desert Conservation Area (CDCA) plan. Currently, the CDCA Plan requires alternative energy projects to be permitted though the planning process. As such, the decision process requires the BLM to first make a determination if the plan should or should not be amended. The BLM alternatively could make a determination that the CDCA Plan should be amended. That amendment decision could be in the form of amending the plan to prohibit wind energy projects on the project site area (unsuitable determination) or to allow for wind energy projects on the project site area (suitable determination). A plan amendment to prohibit wind energy on the project area effectively is a denial for the proposed wind energy project and any other potential projects for the area. A CDCA Plan amendment to allow wind energy on the project site would allow for further detailed analysis of the Proposed Project as proposed. A BLM decision would then be to approve, conditionally approve or deny the

project (ROW application, etc.) on the merits and details of the proposal. The following decision tree details this discussion. Within this context, the following alternatives have been developed for further analysis in this environmental document.



2.2.1 Summary of Alternatives Evaluated

In accordance with NEPA and CEQA requirements, this DEIS/EIR evaluates the following alternatives in detail with respect to the proposed planning action. The alternatives relevant to consideration of the Proposed Project are presented within this framework so the relationship between the planning decision and the implementation decision remains clear. Also, consideration of the Proposed Project and its environmental consequences provides a concrete example of a project that informs the planning decision regarding environmental suitability. The Proposed Project would only be approved under Alternative 1 of the following under consideration:

- Alternative 1: Proposed Project – BLM would amend the CDCA Plan to designate public lands within the area as suitable for wind energy development and authorize the ROW application for the Proposed Project. The County would grant a conditional use permit for project development on private lands. The Granite Mountain Wind

Energy Project would be implemented using one of two following alternative access routes:

- Alternative Access Route 1A – East Access to the Proposed Project
- Alternative Access Route 1B – West Access to the Proposed Project

In addition, one of two following alternative interconnection substations, identified by SCE as the Jasper Substation, and an associated transmission line to the selected substation would be utilized:

- Alternative Jasper Substation 1A – Public land southeast of the Proposed Project
- Alternative Jasper Substation 1B – Private land southeast of the Proposed Project

Under Alternative 1, for the Proposed Project, BLM may eventually select any combination of access and substation. That is, BLM may eventually select Alternative Access 1A and Alternative Jasper Substation 1B, or vice versa.

- Alternative 2: BLM would amend the CDCA Plan to determine that the site is suitable for wind energy development but deny the ROW application for the Proposed Project. The County would not grant a conditional use permit for Project development on private lands. The Granite Mountain Wind Energy Project would not be implemented.
- Alternative 3: BLM would amend the CDCA Plan to determine that the site is unsuitable for wind energy development and the ROW application for the Proposed Project could not be authorized. The County would not grant a conditional use permit for Project development on private lands. The Granite Mountain Wind Energy Project would not be implemented.
- Alternative 4: No Action. BLM would take no action on amending the CDCA Plan or authorizing the ROW. No determination on site suitability for wind energy development would occur, and the County would not grant a conditional use permit for project development on private lands. The Granite Mountain Wind Energy Project would not be implemented.

Section 2.2.5 identifies the agency's preferred alternative, and Section 2.3 summarizes alternative actions that were identified but not evaluated in this DEIS/EIR. Table ES-1 at the end of the Executive Summary compares the environmental impacts of the alternatives on each environmental resource.

2.2.2 Alternative 1: Proposed Project

The Proposed Action is the determination that the Project site is suitable for wind energy development and authorization of a ROW on public land and a CUP on private lands for the development of the Granite Mountain Wind Energy Project within the Granite Mountains, located between the Town of Apple Valley and community of Lucerne Valley in San Bernardino County, which would then result in construction and operation of the Granite Mountain Wind Energy Project:

- The site suitability determination and its rationale would be reflected in an amendment to the CDCA Plan for the portion of the Proposed Project on BLM-administered land. A CUP from the County of San Bernardino would confirm the

Project's compatibility with the General Plan and development standards for the portion of the Proposed Project on private land.

- The approval of a portion of the 220kV transmission line proposed to extend outside of the transmission corridor and its rationale would be reflected in an amendment to the CDCA Plan.
- The Granite Mountain Wind Energy Project consists of constructing and operating 28 wind turbine generators, each with a pad mount transformer and a crane pad alongside. The crane pad at each WTG would be temporary and serves as a lay-down area for the temporary storage and erection of the wind turbine and blades. The Proposed Project also includes an underground electrical collection system, grounding system, communication lines, a Project electrical substation, a transmission line, an interconnect substation, an O&M building, a primary access road, a utility maintenance route, and two meteorological towers. Temporary facilities associated with construction include on-site concrete batch and gravel crushing plants, materials staging and assembly areas, and a construction office. Total area of land affected by the project is identified in Table 2-1.

PROJECT SELECTION

The applicant evaluated a large area in Southern California, involving dozens of sites with potential wind energy resources, prior to selecting the Granite Mountain site for wind energy development. The primary factors that led to the selection of the Granite Mountain site were superior wind resources; transmission access; fewer, manageable environmental conflicts; and no identified conflicts with aviation, including military aviation.

The project layout, design, and size were primarily driven by limitations on where wind turbines could be located on ridgelines atop Granite Mountain in the Project area. The specific locations of turbines were further refined based on energy output and constructability. In addition, design modifications and additional options to access roads and the Jasper Substation have been incorporated to address issues such as the following:

- Bendire's thrasher and visual concerns led to additional bird surveys and identification of the east access option (Alt 1A) as a less impactful option. The location was refined as a result of additional geotechnical, hydrologic, and engineering studies; this access option is now the applicant's preferred access.
- The location of an active golden eagle nest near the proposed public land substation and additional potential siting feasibility issues led to the evaluation of approximately 60 other substation sites by the utility provider, as well as selection of one private land substation option and an alternative location, for which additional surveys would be conducted this spring prior to selection of an agency-preferred alternative for the substation.

Table 2-1 Total Land Area Affected by Specific Project Component

PROJECT COMPONENT	QUANTITY	TYPE	AREA (ACRES)
Turbine Foundations Long-Term Disturbance	28	Long-Term	0.66
Turbine Transformers	28	Long-Term	0.29
Turbine Crane Pads	28	Long-Term	6.49
Additional Temporary Disturbance Around Turbines	28	Temporary	58.32
Staging Areas	2	Temporary	7.12
Additional Staging Area	1	Temporary	1.79

PROJECT COMPONENT	QUANTITY	TYPE	AREA (ACRES)
Project Substations	1	Long-Term	1.78
Jasper Interconnection (Alt 1A)	1	Long-Term	12
Jasper Interconnection (Alt 1B)	1	Long-Term	12
O&M Buildings	1	Long-Term	2.00
Site Office	1	Temporary	2.99
Batching Plant	1	Temporary	2.99
Crushing Plant	1	Temporary	4.18
Overhead Transmission Line Staging Area	1	Temporary	4.84
Meteorological Towers	2	Long-Term	0.06
INFRASTRUCTURE LENGTHS	**LENGTH (M)**	**TYPE**	**AREA (ACRES)**
New Road (On-site where crane is walking)	19,320	Long-Term	57.29
New Access Road Alternative 1A (Before crane is assembled)	7,120	Long-Term	10.56
New Access Road Alternative 1B (Before crane is assembled)	13,931	Long-Term	20.65
MV / Comms Trench	19,320	Temporary	19.10
Overhead Transmission Line Poles (1A)	5,145	Long-Term	0.04
Overhead Transmission Line Poles (1B)	7,556	Long-Term	0.06
Overhead Transmission Line Access Road (1A)	5,145	Temporary	7.63
Overhead Transmission Line Access Road (1B)	7,556	Temporary	11.2
Road Turnings (Cut-and-Fill footprint)		Long-Term	10.0
Access Road Staging Area		Temporary	2
CUMULATIVE DISTURBANCE		**WITH ACCESS 1A (ACRES)**	**WITH ACCESS 1B (ACRES)**
Long-Term with Interconnect Alt 1A		101.23	111.32
Long-Term with Interconnect Alt 1B		101.23	111.32
Long-Term / Turbine		3.3	3.6
Temporary		108.9	110.9
Temporary / Turbine		3.9	3.9
TOTAL with Interconnect Alt 1A		217.3	229.7
TOTAL with Interconnect Alt 1B		217.3	229.7

LAND OWNERSHIP

The Proposed Project's 2,756 acres combined maximum ROW, including transmission lines and access road alternatives, would be located on 2,086 acres of public lands administered by the BLM (Barstow Field Office) and 670 acres of privately owned land under County land use jurisdiction. One individual owns the private land. The distribution of turbines and other related long-term and temporary Project improvements across public and private land is as follows:

Table 2-2 Distribution of Project Improvements

TOWNSHIP/ RANGE/ SECTION*	NUMBER OF TURBINES	OTHER IMPROVEMENTS	PUBLIC OR PRIVATE
6N 2W 25	1	Access Road (Alt 1B) Maintenance Road	Public
6N 2W 26	0	Access Road (Alt 1B)	Public
6N 2W 35	0	Access Road (Alt 1B)	Public
6N 2W 36	8	Maintenance Road Construction Staging	Private
6N 1W 28	0	Access Road (Alt 1B)	Public

Township/ Range/ Section*	Number of Turbines	Other Improvements	Public or Private
6N 1W 29	0	Access Road (Alt 1B)	Public
6N 1W 30	0	Access Road (Alt 1B)	Public
6N 1W 32	0	Access Road (Alt 1A) Materials Crushing/Concrete Batch Plants & Staging	Public
6N 1W 33	0	Access Road (Alt 1A) Turbine Staging Areas	Public
5N 2W 1	5	Access Road (Alt 1B) Maintenance Road Construction Staging	Public
5N 2W 2	0	Access Road (Alt 1B)	Public
5N 2W 12	4	Maintenance Road	Public
5N 1W 5	0	Access Road (Alt 1A)	Public
5N 1W 6	3	Access Road (Alt 1A)	Public
5N 1W 7	5	O & M Building Project Substation Maintenance Road Transmission Line Construction Staging	Public
5N 1W 8	2	Maintenance Road Transmission Line	Public
5N 1W 15	0	Transmission Line Jasper Substation (Alt 1A)	Public
5N 1W 16	0	Transmission Line Transmission Line Staging Area	Public
5N 1W 17	0	Transmission Line	Public
5N 1W 2	0	Transmission Line Jasper Substation (Alt 1B)	Private

*San Bernardino Meridian

LAND DISTURBANCE

Project construction activities would occur over a period of approximately 9-12 months. Wind energy development and construction activities would disturb between 217.3 to 229.7 acres, which includes between 101.23 and 111.32 acres of long-term disturbance and 109 acres of temporary disturbance (see Table 2-1). Construction would include the following:

- Grading of the field construction office and Project substation areas
- General clearing and construction of utility maintenance roads
    - Alternative Access Route 1A: A new access road off of Spinel Street in the Lucerne Valley Community Plan Area
    - Alternative Access Route 1B: An upgraded access road off of Spinel Street within the sphere of influence of Lucerne Valley and an upgraded and new access road within the sphere of influence of the Town of Apple Valley
- Crane pads and turn-around areas
- Construction of turbine tower foundations
- Installation of the electrical collection and communication system
- Assembly and erection of the wind turbines

- Construction and installation of the Project substation
- Construction of a transmission line and utility interconnect from the Project substation to the selected Jasper substation
- Plant commissioning and energization
- Final grading and drainage
- Restoration activities

All Project construction would follow site-specific soil erosion and sediment control measures described in a Stormwater Pollution Prevention Plan (SWPPP) prepared and implemented in accordance with State Water Quality Order 99-08-DWQ (or, after July 1, 2010, with Order 2009-0009-DWQ) under the state's General Permit for Discharges of Stormwater Associated with Construction Activity (Construction General Permit).

No clearing and grading activities would take place until sediment and erosion control measures have been installed. Clearing and grading would occur in the following order: access road, lay-down area, turbine and other facility locations, interconnect routes, and transmission line. Clearing and disposing of trash, debris, and scrub on those portions of the site impacted by construction would be performed in the initial stages of construction. All excavations made by clearing activities would be backfilled with compacted earth/aggregate available on-site.

The following activities may require blasting: 1) construction of the access road from Spinel Street in the community of Lucerne Valley to the top of Granite Mountain in order to reach the necessary slope and gradient for the road and 2) construction of turbine foundations. Each location would be assessed with regard to apparatus or structures in the vicinity, and a determination would be made on the suitability of that location for blasting. All blasting would be conducted by properly licensed contractors. Any foundation or road excavation deemed to be unsafe to blast by the Project contractors would be excavated by alternative means.

LONG-TERM PROJECT FACILITIES

Wind Turbines

The 28 WTGs proposed for this Proposed Project are 3-bladed turbines with a range between 2.1 MW and 3 MW in capacity, depending on the make and model selected for the Proposed Project, for a total capacity ranging between 58.8 MW and 84 MW. The maximum dimensions for each turbine would include a tower height of approximately 80 meters (262 feet) tall with blades that would extend an additional 50.5 meters (166 feet) above the hub, for a total maximum height of approximately 130.5 meters (428 feet).

The foundation of each WTG would be a spread-foot design or equivalent using concrete reinforced with steel rebar. Excavation of the new foundations would be to a depth of approximately ten feet and a width of 50 to 60 feet. Concrete for the foundations would be made at the temporary on-site batching plant from gravel crushed at an on-site temporary gravel crushing plant. Once the foundation cured, it would be buried and backfilled with the excavated on-site material.

As required by the Federal Aviation Administration (FAA), the Proposed Project would require a Determination of No Hazard to Air Navigation for each turbine. FAA

determinations have been received, and 13 of the 28 turbines would require L-684 red synchronized lights at night time to comply with FAA requirements.

Fencing is proposed at the substations, O&M building, and meteorological towers associated with the Proposed Project for safety and security purposes of these structures. The site will also be monitored for security purposes by operations and maintenance personnel. Appropriate safety and warning signs would also be posted throughout the Project area, as needed, to alert unauthorized individuals of potential hazards and safety issues.

Roads

There are no existing roads suitable for vehicular access to or around the Project site; thus, all roads would be new construction except for minor upgrades to Spinel Street and major upgrades to Johnson Road, if that alternative is selected. The Proposed Project requires a maximum of approximately 12.7 miles of new roads. Access to the Proposed Project would be via Spinel Street from SR-247 (Barstow Road) in the community of Lucerne Valley. The portion of the access road extending up Granite Mountain would require substantial excavation and fill to achieve the required width, slope/grade, and limited radius curves. There are two alternative access routes: 1A and 1B:

- *Alternative Access Route 1A – East Access to Granite Mountain:* Under this alternative route, access to the Project site would be from SR-247, east of the Project area. Access would follow Spinel Street heading west for approximately one mile to the point where Spinel Street ends and turns into Johnson Road at the onset of BLM-administered lands. At this point, a new access route would be built, heading southwest approximately 4.4 miles to the top of the ridge near the center of the site. This access would approach the top of Granite Mountain from the east (Lucerne Valley) side of the mountain. Alternative Access 1A is the applicant's proposed access.
- *Alternative Access Route 1B – West Access to Granite Mountain:* Access to the Project site through Access Route 1B would also be from SR-247, east of the Project area. Access would follow the same route as 1A for the first mile, along Spinel Street. At the onset of BLM-administered lands, this alternate access route would continue along the existing unmaintained Johnson Road, heading first northwest for approximately four miles to the base of the north side of the mountain before turning southwest around the base of the west side of Granite Mountain for approximately two miles. At this point, a new access road would be built heading approximately 1.5 miles east up the saddle to the ridge top near the center of the site. This access route would approach the top of Granite Mountain from the west (Apple Valley) side of the mountain.

Once the access road has reached the top of Granite Mountain, roads would be constructed to connect the wind turbines, Project substation, and O&M building.

The access road would be approximately 4.4 miles in total length, at a width of approximately 40 feet if Alternative Access Route 1A is selected and approximately 8.7 miles in total length at a width of approximately 40 feet if Alternative Access Route 1B is selected.

Roads would be rough-graded and consist of approximately six inches of gravel over compacted native material. Roads would be constructed at-grade with base fill material

used only where needed to supplement the existing base or to blend the road into the surroundings. Culverts would be installed in areas where water may move to wash out roads. Upon completion of construction, roads would be left in place to provide access for O&M purposes. All new Project roads would be designated as limited to permitted use, consistent with the criteria established in 43 CFR 8342.1.

Operations and Maintenance (O&M) Building

The O&M building would be a composite panel building of approximately 75 feet long by 50 feet wide and 12-20 feet tall and would be off-white or sand in color. A trench approximately 1 foot to 3 feet wide (depending on the ground conditions) would be dug around the perimeter of the O&M building and filled with concrete. Beams would be put in place to form the floor. The building would be located in a compound of approximately 2 acres, with the rest of the area being covered with gravel. Two water tanks would be installed near the building, as would an on-site septic tank for sewage collection. A small parking area for maintenance trucks would also be provided within the O&M compound.

Transmission System and Jasper Substation

An aboveground 220-kV overhead transmission line is planned to be routed from the Project substation to connect with SCE's 220-kV Lugo-Pisgah transmission line located southeast of the Project area. The width of the transmission line construction right-of-way is approximately 150 feet. After construction, the right-of-way is expected to consist of a width of 30 to 50 feet for the maintenance road and transmission line. Less width may be required for portions of the right-of-way where access to the transmission line is facilitated by existing roads, such as those associated with the existing SCE transmission lines. Two options for the Jasper Substation location are proposed, and, depending on the selected location, two transmission line alignments have been identified (**Figure 1-2**).

Under both alternatives, the Jasper substation would include a small control building. The size of the substation would be approximately 200 feet by 400 feet and 100 feet tall. Specifics of the two interconnection options follow:

- *Alternative Jasper Substation 1A – Public Land:* The substation would be on public BLM-administered land located southeast of the Project site at an area adjacent to SCE's existing 220-kV regional transmission system, where an interconnection would be provided. A 3.2-mile overhead transmission line would be constructed from the on-site Project substation to the SCE interconnect substation and regional transmission system. The Proposed Project's overhead transmission line to the Lugo-Pisgah interconnection line would be 3.2 miles in length from the Project boundary, and located entirely on federal lands administered by the BLM, under the Public Land Substation option. Alternative 1A is the applicant's proposed interconnection option.
- *Alternative Jasper Substation 1B – Private Land:* This substation alternative would be located east of the Project site on privately owned land near SR-247 and the intersection of Haynes Road. A general location has been identified for this alternative; a specific location would be determined at a later date based on the results of negotiations with various landowners and results of environmental surveys. The following components compose the Jasper Substation at this location:
    - Substation Construction: Build a 220-kV collector substation on about 10 acres of land.

- Transmission Lines: Loop the Lugo-Pisgah #1 220-kV transmission line into Jasper Substation by adding approximately 5,000 feet of new transmission line (two lines of approximately 2,500 feet each located side-by-side within a corridor approximately 2,500 feet long), creating the Jasper-Pisgah and Jasper-Lugo 220-kV transmission lines.
- Generation Tie Line Connection: Connect the customer-built generation tie line (gentie) into the SCE-owned Jasper Substation property.
- Telecommunications Facilities: Install fiber-optic communication cables and associated poles for diverse path routing of communications required for the Project substation to the Jasper Substation.

Under both alternatives, an approximately 3.6- to 4.2-mile overhead transmission line from the Project boundary to the interconnect substation would be constructed. The energy would be transmitted from the Project substation through the new 220-kV transmission line to the new Jasper Substation, where it would connect to the existing SCE transmission grid via the Lugo-Pisgah No.1 220-kV line. Following electrical interconnection of the Proposed Project's 220-kV overhead line with SCE's 220-kV system, the Proposed Project would be energized, tested, and commissioned prior to commencing commercial operation and sale of renewable electricity. The Jasper Substation would be fenced, and signage would be posted in and around the Project site for safety and security purposes.

Collection and Communications Systems

The energy generated by the wind turbines would be delivered to the Project substation via the underground collection system, which utilizes fiber-optic communications cable buried beneath the ground. At the Project substation, a transformer would increase the voltage of the energy from the collection system level of 34.5 kV to the transmission level of 220 kV. Capacitor banks and other equipment may be installed at the Project substation to provide the voltage support necessary to meet the interconnection requirements. A small control building within the Project substation would house electrical metering equipment.

Open trenching would be necessary for the placement of the electrical collection system cables and fiber-optic communication lines. The collection and communication systems would be constructed parallel to the roads running from and between the wind turbines to the Project substation and O&M building and would be excavated by a trenching machine to a depth of four feet and width of two feet. The extent of the open trench at any given time would be minimized to only those distances necessary to conduct work. Once the electric cables and fiber-optic communications cable have been placed into the trench and connected to the wind turbines and transformers (as applicable), the trench would be backfilled with the excavated trench material.

Meteorological Towers

Two permanent meteorological towers would be installed, as required by SCE. The towers would measure the flow and direction of wind across the site; the resulting data would be used to forecast the energy anticipated to be generated by the Proposed Project. The exact locations of the towers are currently unknown, but they would be placed in the Project site within T6N R2W S36 and T5N R2W S36. Each free-standing lattice steel tower would stand approximately 80 meters (262 feet) tall, with a small foundation. The total area disturbed for each tower would be approximately 36 feet by 36 feet.

TEMPORARY PROJECT FACILITIES AND ACTIVITIES

Construction Facilities

Temporary facilities would be needed during construction of the Proposed Project, including equipment and materials staging areas and materials storage and assembly. Specific facilities and area of disturbance are identified below in Table 2-3.

Table 2-3 Temporary Construction Facilities

TYPE OF FACILITY	GENERAL LOCATION	APPROXIMATE AREA OF DISTURBANCE
Construction Office	Adjacent to WTG #23	3 acres
Material Crushing	"	4 acres
Concrete Batching	"	3 acres
Overhead Transmission Line Staging	"	5 acres
Turbine Staging	Adjacent to permanent turbine locations	67 acres

Construction Workforce

The Project proponent anticipates that some of the proposed 75 construction personnel needed for the Proposed Project would come from the local workforce. Construction personnel are not expected to in-migrate to the area, but, if needed, they would use local hotels and rental housing during construction of the Proposed Project. Additional details are provided in Section 3.11, *Socioeconomics*.

PROJECT OPERATION AND MAINTENANCE ACTIVITIES

A team of up to eight personnel would operate and maintain the Proposed Project. Routine operations would include monitoring and control of the wind turbines from the centralized computer in the O&M building or remotely and resetting the turbine controls and re-starting turbines after any outages. Routine inspections would occur on a daily basis, and periodic maintenance would include lubricating mechanical parts, changing fluids, and, if necessary, blade cleaning. During the Project operation period, roads would be inspected at least twice annually. Periodic grading and placement of gravel may be required to maintain road quality. Road maintenance would be scheduled during times of low or no wind to minimize airborne dust. Speed limits of 20 miles per hour (mph) would be posted and enforced for all O&M vehicles to minimize airborne dust and erosion.

The Proposed Project would be expected to operate for up to 30 years, until such time as it is no longer cost effective to continue commercial operations.

PROJECT DECOMMISSIONING

When the owners have determined the Proposed Project is no longer cost effective to continue commercial operations, the Proposed Project would be decommissioned. Decommissioning involves removal of the existing equipment and returning the site to a condition as close to a pre-construction state as feasible. The major activities associated with decommissioning include:

- Wind turbine and meteorological tower removal;
- Pad-mount transformer, electrical and communications system removal;
- Structural foundation removal per ROW authorization requirements;
- O&M building removal;

- Road removal;
- Re-grading; and
- Re-vegetation.

The decommissioning activity most notable to the general public would be the removal of the wind turbines and the visual impacts associated with the structures. The large components that make up a wind turbine would be dissembled in the reverse order they were assembled.

Removal of buried electrical and fiber-optic cable between turbines is also an activity associated with decommissioning. The Project applicant proposes to remove the cables, but would discuss with the BLM at the time of decommissioning if it is desired to remove these cables or leave them in place. If the cables are to be removed, a trench would be opened and the cables pulled out. The trenches would then be filled with native soil and compacted. The disturbed area would be restored consistent with the Re-vegetation Plan.

The Proposed Project and transmission line would be de-energized, and the substation would be disassembled. The Project applicant anticipates removal of the substation grounding grid, but would discuss with the BLM at the time of decommissioning if it is to be removed or left in place. Assuming the transmission line no longer serves a purpose for the site, it would be disassembled and removed. The O&M building would also be removed, as would the septic system in a manner consistent with state and local health regulations.

It is possible the Project owners would want to work with the BLM and the County to re-power the site, which would involve replacing the existing facility with a new one on the same site; however, re-powering is not being considered in this plan, as it is not reasonably foreseeable at this time.

Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development, ROW Application Denied, and CUP Not Approved

Under this alternative, BLM would amend the CDCA Plan to determine that the site is suitable for wind energy development, but would deny the ROW application for the Proposed Project. In addition, the County would not approve the CUP for the Proposed Project. Other similar ROW applications for wind energy development projects on the site could be submitted and receive authorization from BLM, and submittal of CUP applications for similar projects could be submitted to and approved by County.

Alternative 3: Action on Amendment to CDCA Plan Determines Site Unsuitable for Wind Energy Development

BLM would amend the CDCA Plan to determine that the site is unsuitable for wind energy development and would not authorize the ROW application for the Proposed Project. The County would not grant a conditional use permit for project development on private lands. The Proposed Project would not be implemented. Under this alternative, the Project site would be determined unsuitable for wind energy development. This unsuitability determination and its rationale would be reflected in an amendment to the CDCA Plan. Under the plan amendment, wind energy development projects would not be permitted on public lands within the Project area. The CUP application for the Proposed Project would not be approved by the County and could not be constructed on the Project site.

Other (non-wind) renewable energy development would be subject to NEPA compliance and the planning process. The site would remain in its present condition consisting of vacant desert lands, subject to the area's Multiple Use Class (MUC) provisions of the CDCA Plan. Actions suitable for MUC "limited" may continue to be authorized in the Project area, subject to NEPA and other pertinent laws and regulations.

Alternative 4: No Action on Both Site Suitability Amendment and Proposed Project

Under the No Action Alternative ("No Project Alternative" under CEQA), BLM would make no determination regarding site suitability for wind energy development and would issue no amendment to the CDCA Plan. However, the Proposed Project would be denied by BLM and a CUP would not be issued by the County. The site would remain in its present condition consisting of vacant desert lands, subject to the area's MUC provisions of the CDCA Plan and the RC provisions of the San Bernardino County General Plan. Actions suitable for MUC "limited" and the RC zoning designation may continue to be authorized in the Project area, subject to NEPA, CEQA, and other pertinent laws and regulations, including renewable energy development (wind and non-wind projects).

2.2.3 Agency Preferred Alternative

BLM's preferred alternative is Alternative 1, the Proposed Action, with Access Route 1A (east access) and Jasper Substation Location 1B (Private Land). The BLM would authorize the ROW application and amend the CDCA Plan to designate public lands within the area as suitable for wind energy development, and the County would grant a conditional use permit for project development on private lands. The Proposed Project would be implemented, using the east access to the Proposed Project via a newly constructed access route, and would include a transmission line to an interconnect substation on private land southeast of the project area, near the northwest intersection of SR-247 and the existing large utility lines.

2.3 ALTERNATIVES CONSIDERED AND NOT CARRIED FORWARD FOR DETAILED ANALYSIS

2.3.1 Same Project Area and Turbines, with Reduced Turbine Size

Under this alternative, instead of using the 28 2.3-MW wind turbine generators intended for this project, wind turbines smaller in scale (total tip height of approximately 90 meters instead of 130.5 meters) would be used. The number of smaller turbines would be increased to achieve the minimum power output of 59.8 MW or higher, which is the minimum power identified by the applicant to make this Project economically feasible to build. A project generating less than 59.6 MW would essentially be the same as No Action, given the initial capital cost outlay. To reach this capacity, more turbines are required. For a project using 850-kilowatt (kW) WTGs, to produce a total of at least 60 MW, there would need to be approximately 75 turbines. If the project were to use a 1,000-kW WTG, approximately 60 turbines would need to be constructed to generate approximately 60 MW. Because of the limited space for the Project on top of the mountain, the granitic substrate that makes construction on the hillsides challenging, and manufacturer warranty standards that require specific layout design and distances between each turbine, this option is not feasible due to the site's size and topography. It is not feasible to fit the amount of WTG on the project site with smaller turbines and reach the anticipated power output needed for the Project to be viable, from the applicant's point of view.

BLM conducted a preliminary analysis of impacts from a project with a larger number of smaller turbines and found that major impacts were similar—visual impacts would still be

substantial from nearby communities, and may be higher because of the need for additional FAA lighting, and impacts resulting from the excavation and disturbance of lands would be slightly higher.

2.3.2 Reduced Number of Turbines

In response to comments received during scoping, BLM considered an alternative which would include a fewer number turbines, in an attempt to reduce the visual impacts. Under this alternative, 3-6 turbines were eliminated. An evaluation was performed to identify which turbines were the most dominant and visible to sensitive receptors with views of the Project, including running of viewshed models and using each Key Observation Point (KOP). Special attention was given to KOPs that were found to not meet Bureau of Land Management (BLM) Visual Resource Management (VRM) objectives (KOPs 1, 3, and 5) and KOP 2, which, although consistent with VRM objectives, had the largest degree of contrast. A simulation was developed to explore whether such an alternative reduced the visual impacts. Upon review of the simulation, described in detail in Appendix D, BLM determined that it did not affect the visual impacts in a way that expanded the range of alternatives, and so this alternative has not been carried forward for analysis. However, as a result of developing this simulation, and considering visual impacts, certain of the maps and descriptive material in this DEIS/EIR have been enhanced, in order that readers will better be able to see clearly the nature and scope of those visual impacts. In particular, three new KOPS have been incorporated into the discussion of visual impacts in Section 3.3.

2.3.3 Alternative Turbine Technologies

Using alternative wind turbine technologies such as Vertical Axis Wind Turbines (VAWT) was considered. VAWT, or “Eggbeaters,” are a type of wind turbine where the main rotor shaft is positioned vertically. The value of looking at alternative turbine technologies would be their potential to reduce visual impacts or impacts to avian species, or to produce more energy per turbine. However, this type of wind turbine is still in the research stage and has not been proven as a viable technology for development-scale projects. Therefore, this alternative is not available for implementation in the Proposed Project.

2.3.4 Alternative Locations

BLM’s purpose and need is to process a right-of-way application. While the BLM and the County recognize that numerous alternative locations could produce renewable energy and support that type of energy development in appropriate locations, there is a limit to the degree to which the BLM and the County must consider alternative locations. In addition, for reasons described below, primarily related to BLM’s attempt to implement the wind energy program consistent with the policies and BMPs presented in the PEIS, there is limited utility in considering alternative sites with respect to the Proposed Project. The discussion in the PEIS in Chapter 2 applicable to the policies regarding exclusion of certain resource areas from consideration for siting of such projects, of impacts and mitigation measures discussed in Chapter 5, and of BMPs in Appendix A of the PEIS Record of Decision (ROD) related to avoiding certain sensitive areas are hereby incorporated by reference.

The benefit of looking at different locations would be that it may allow BLM to avoid impacts identified for the Granite Mountain location or identify locations that are less sensitive for specific resource values. Finding a viable alternative location could allow land in the Project area to remain undeveloped, thus eliminating potential visual and cumulative impacts in this area.

For the Project area, preliminary consideration of sites other than the proposed area was conducted by both the applicant and the BLM. In particular, the BLM considered the viability of alternative locations for the Project, in light of the policies presented in the PEIS and subsequent program guidance. Consistent with this consideration, discussions between the BLM and the applicant during the application process in mid-2007 resulted in a narrowing of possible Project areas to the Granite Mountain site (with adequate wind potential) to avoid areas identified for avoidance of wind project siting by the policies and/or BMPs presented in the PEIS. Many of the remaining sites had major technical constraints, such as very steep terrain or lack of a nearby utility transmission line to move Project-generated electricity to the grid.

BLM has subsequently developed a preliminary map of potential wind energy alternative sites under the jurisdiction of the Barstow Field Office, using data developed by the Department of Energy, National Renewable Energy Laboratory (NREL). NREL has prepared maps showing wind energy potential in the United States, using a scale from 1 to 7, ranging from poor to superb potential. Other than a few remote sites near Death Valley National Park without reasonable access to transmission interconnection and that would require a major transmission line over several miles outside of utility corridors, the West Mojave planning area provided the most feasible alternatives under the jurisdiction of this office, using this data. Using the NREL maps, BLM identified good and better wind potential sites that are in areas analyzed in the PEIS and are not in exclusion or avoidance areas; the BLM used in its maximum potential development scenario.

In the West Mojave, many areas that are unconstrained by the siting parameters articulated in the policies and BMPs presented in the PEIS have 1 (poor) or 2 (marginal) wind potential; some have fair (3) potential; and a few have good (4) or excellent (5) potential with small areas of 6 (outstanding) or 7 (superb) potential. Consistent with the constraints identified in the PEIS, potential alternative sites to the proposed project were not identified in the West Mojave planning area if they were within the NLCS areas.[3] In addition, approximately 199,000 acres of land in the West Mojave Planning area have been segregated from long-term rights-of-way while under consideration for military withdrawal. Other public lands are precluded from development based on their acquisition as conservation lands, and some lands have been determined to conflict with military use of air space.

Some of these constraints are not absolutely limiting, such as ACECs and land classifications. However, they add significant new impacts that add to the complexity of the document. Project areas within ACECs that are critical habitat for listed species substantially increase potential cumulative impacts, required analysis, and BMPs for those impacts in order to address concerns about their potential to compromise achievement of species recovery objectives.[4] Projects within segregated lands that are under consideration for long-term military withdrawal are not ripe for decision-making at this time. Other ACECs and lands acquired for conservation purposes may be subject to substantial limitations on development activities to address the specific issues for which they were designated or acquired. Taken together, these constraints eliminated many otherwise reasonable alternatives to the Proposed Project location in the region that have potentially viable wind resources. BLM also limited its site alternatives to those that could accommodate at least 20 turbines that are within 10 miles of a potential interconnect transmission line in a

[3] Projects may be considered in some of these areas on a case-by-case basis.
[4] USFWS, 2009.

designated or contingent utility corridor and that have 4 (good)[5] or higher wind potential. The Proposed Project site is one of few sites that meet the siting criteria.

[5] Some sites with fair wind potential may be developable, but so far, little interest has been shown in them in the CDCA due to the capital costs associated with project development.

This page intentionally left blank.

This chapter describes the resource values of the Project area and how the alternatives could affect those resources.

Some resource values are not discussed in this chapter because they are not found in the Project area and are not relevant. The following resource values are not discussed: agriculture, mineral resources, and public services.

In this analysis, the baseline affected environment is defined as those conditions that existed in February 2008, at the time the NOP was issued by the County Land Use Services Department.

3.1 TYPES OF EFFECTS

The potential impacts from those actions that would have direct, indirect, and cumulative effects were considered for each resource. Effects and impacts as utilized in this document are synonymous and could be beneficial or detrimental.

Direct effects are caused by the action and occur at the same time and place as the action. Indirect effects are caused by the action and occur later in time or further in distance, but are still reasonably foreseeable. Cumulative impacts are those effects resulting from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions (regardless of which agency or person undertakes such actions). Cumulative impacts could result from individually insignificant but collectively significant actions taking place over a period of time.

In accordance with the CEQ regulations for implementing NEPA, the EIS is to analyze environmental impacts of the alternatives, including any adverse environmental effects that cannot be avoided, the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources that would be involved in the proposal should it be implemented.

This Project-specific NEPA analysis tiers from the PEIS, consistent with 43 CFR 46.140. Implementation of the proposed policies and BMPs in the PEIS, along with any additional site-specific mitigation based on specific site conditions, are intended to ensure that potential adverse impacts to most of the natural and cultural resources present at wind energy development sites, except wildlife and visual resources, would be minimized. This would include potential impacts to soils and geologic resources, paleontological resources, water resources, air quality, noise, land use, and cultural resources not having a visual component.[6] The BMPs adopted by the PEIS have been consulted, and applicable BMPs are incorporated to mitigate impacts to the above affected resource values and uses of the Granite Mountain Wind Energy Project. Tiered analyses of these affected resources have been conducted to include additional Project site configuration and micro-siting considerations, monitoring program requirements, and appropriate mitigation measures, such that impacts would be consistent with those anticipated in the PEIS.

[6] Programmatic Final Environmental Impact Statement for the Implementation of a Wind Energy Development Program and Associated Land Use Plan Amendments, p. 6-3.

The regulations at 43 CFR 46.140 require that, to the extent that relevant analysis in the broader NEPA document is not sufficiently comprehensive or adequate to support further decisions, the tiered NEPA document explain this and provide any necessary analysis. The PEIS analysis determined that BMPs would reduce potential impacts to biological and visual resources, although the degree to which this could be achieved would be site-specific, and that therefore, biological and cultural impacts would need additional analysis based on the specific resources found on-site or within the site's area of potential effect. Therefore, biological and visual impacts analyses must be conducted on a more project-specific level to evaluate the level of impacts and appropriate strategies to address those impacts within the area of potential effect.

Consistent with the PEIS and BLM program guidance, inventories of general wildlife and botanical species and additional studies to address unique and special status species have been conducted. For any special species and unique habitats found in the Granite Mountain Wind Energy Project area, additional analysis has been conducted. A visual inventory and extensive visual impacts analysis has also been conducted. PEIS BMPs and additional mitigation measures have been incorporated to the extent feasible. Tribes have also been consulted on the Project, including visual landscapes.

In addition to potential effects to biological and visual resources, the cumulative analysis in the PEIS did not foresee the extent to which other large-scale energy projects would be proposed and could result in cumulative effects in the reasonably foreseeable future in this area. More specifically, the cumulative analysis assumptions provided in the PEIS related to acres anticipated for land disturbance in the maximum development scenario are no longer valid for the Granite Mountain Wind Energy Project area, based on the anticipated disturbance area anticipated for California. Therefore, the cumulative analysis in this chapter extends the cumulative analysis found in the PEIS to address this change in conditions.

Section 15126.6 of the state CEQA Guidelines requires the discussion of "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." In order to meet this CEQA standard, the alternatives discussion is intended to "focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives."

Under Section 15126.6 of the CEQA Guidelines, the EIR document needs to describe a reasonable range of feasible alternatives to the proposed project. The document must include sufficient information about each alternative to allow for meaningful evaluation, analysis, and comparison with the proposed project.

The analysis considers the context, intensity, and duration of an impact. *Context* relates to environmental circumstances at the location of the impact and in the immediate vicinity, as well as other interests that are potentially affected. *Intensity* refers to the severity or extent of the impact or magnitude of change from existing conditions. *Duration* refers to the permanence or longevity of the impacts, which is depicted as short term or long term. *Short term* is defined as anticipated to begin and end within the first five years after the action is implemented. *Long term* is defined as lasting beyond five years.

For ease of reading, impacts presented are direct, broad (occurring within the planning area), and long term, unless otherwise noted as indirect, localized, or short term/temporary. Because impacts may be perceived as beneficial (positive) or adverse (negative) by different readers, these descriptors were not used in defining impacts.

The impact analysis evaluates the environmental consequences or impacts expected to occur as a result of implementing the proposed actions described for each alternative in Chapter 2. Each resource section has Impact Criteria relating to key considerations in the impact analysis. An impact would occur if the Proposed Project would significantly affect the quality of the environment. The term *significant* is mostly used in this document for CEQA purposes. CEQA defines *significant* as having an effect on the environment, indirectly or directly, based on the Checklist in Appendix G of the CEQA Guidelines. Under NEPA, *significant* is determined by considering the context and intensity of the action and its effects (40 C.F.R 1508.27).

This page intentionally left blank.

3.2 AIR QUALITY

The Project area is located within the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD). The Proposed Project would be located approximately six miles east of the Town of Apple Valley in San Bernardino County, California. This section describes the air quality characteristics of the Project area and the potential impacts of the alternatives on air quality.

3.2.1 Impact Criteria

The air quality impacts associated with the Proposed Project were evaluated in terms of the criteria provided by the CEQA Guidelines. Appendix G of the guidelines indicates that a project would have a significant effect on the environment if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standards (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

In addition to these criterions, MDAQMD has established thresholds for emissions of several of the criteria pollutants. Emissions above these thresholds would be considered significant and would require mitigation to reduce the level of impact. MDAQMD's *California Environmental Quality Act (CEQA) and Federal Conformity Guidelines* (MDAQMD, 2009) lists the following thresholds of significance that apply to construction and operational impacts:

- CO: 100 tons per year
- NO_x: 25 tons per year
- VOC: 25 tons per year
- SO_x: 25 tons per year
- PM_{10}: 15 tons per year
- $PM_{2.5}$: 15 tons per year; MDAQMD does not have a threshold of significance specific to $PM_{2.5}$, so the threshold for PM_{10} was utilized to determine significance.

The Governor's Office of Planning and Research (OPR) believes the unique nature of GHG emissions warrants investigation of a statewide threshold of significance for GHG emissions. Therefore, OPR has asked the technical staff of the California Air Resources Board (CARB) to recommend a method for setting thresholds of significance. CARB has not formally adopted statewide significance thresholds with which to compare GHG emissions at this time. Likewise, the MDAQMD has not formally adopted GHG significance thresholds for the Mojave Desert Air Basin (MDAB). Until further guidance is provided from CARB or

MDAQMD, the methodology currently used within the South Coast Air Quality Management District (SCAQMD) was utilized for the Project. Determination of impacts to GHG emissions was performed using the tiered decision tree approach recommended in the *SCAQMD Interim CEQA GHG Significance Threshold Draft Guidance Document,* which was published on December 5, 2008. According to SCAQMD, "Project emissions will include direct, indirect, and, to the extent information is available, life-cycle emissions during construction and operation" (SCAQMD, 2008). In the draft guidance document, a Tier 3 significance threshold of 10,000 metric tons of carbon dioxide equivalents (CO_2e) per year was proposed for industrial projects. The proposed 10,000 metric tons of CO_2e per year threshold is still being debated, but in the absence of alternative significance thresholds within the MDAB, the 10,000 metric tons CO_2e per year level would be applied for determination of GHG impacts from the Proposed Project.

3.2.2 Regulatory Setting

Federal, state, regional, and local governmental agencies are responsible for protecting air quality.

Federal Regulations

The United States Environmental Protection Agency (EPA) is responsible at the federal level for implementing national air quality programs as established under the Clean Air Act (CAA). The EPA has developed primary and secondary National Ambient Air Quality Standards (NAAQS) for several problem air pollutants to protect human health and welfare. Primary standards protect human health, and secondary standards protect the public from non-health-related adverse effects, such as visibility reduction. Primary NAAQS have been established for the following six "criteria" pollutants:

- Ozone – Ozone can cause coughing, wheezing, and respiratory irritation, asthma, and lung diseases.
- Particulate Matter – Particulate matter less than or equal to 10 micrometers (PM_{10}) or particulate matter less than or equal to 2.5 micrometers ($PM_{2.5}$) – Particulate matter can contribute to breathing and respiratory difficulties, including bronchitis and decreased lung function.
- Nitrogen dioxide (NO_2) – NO_2 exposure may decrease lung function and lead to long-term respiratory effects.
- Carbon monoxide (CO) – CO is toxic at high concentrations. At low concentrations, it can cause dizziness and headaches.
- Sulfur dioxide (SO_2) – SO_2 causes respiratory irritation, enhances the effects of ozone, and even accelerates the corrosion of metals. SO_2 vapor can also result in damage to some plant species.
- Lead – Lead has been associated with toxic effects on the nervous system resulting in problems such as slowed growth, hearing problems, headaches, and learning disabilities in humans.

The primary NAAQS are intended to protect (with a large margin of safety) those persons most susceptible to respiratory distress, such as those suffering from asthma or other illnesses, children, the elderly, or people engaged in strenuous exercise or work. The primary standards for these pollutants are shown in Table 3.2-A.

State Regulations

CARB is the state agency responsible for coordinating and overseeing state and local air pollution control programs in California. CARB is also responsible for implementing the California CAA, which was adopted in 1988. CARB has the primary responsibility to develop and implement the State Implementation Plans (SIPs) to achieve and maintain the NAAQS established by the EPA.

California also has established the California Ambient Air Quality Standards (CAAQS), which are more stringent than the NAAQS and include hydrogen sulfide, vinyl chloride, and visibility-reducing particulates, in addition to the six national criteria pollutants. CARB is responsible for identifying and classifying each air basin in the state as being in attainment or non-attainment for each pollutant. These standards are also listed in Table 3.2-A.

Table 3.2-A Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	--	Same as Primary Standard	Ultraviolet Photometry
	8 Hours	0.070 ppm (137 µg/m^3)		0.075 ppm 147 µg/m^3)[8]		
Respirable Particulate Matter (PM_{10})	24 Hours	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		--		
Respirable Particulate Matter ($PM_{2.5}$)	24 Hours	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	8 Hours	9 ppm (10 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry
	1 Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8 Hours (Lake Tahoe)	6 ppm (7 mg/m^3)		--	--	--
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (56 µg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m^3)		0.100 ppm[8]	None	
Lead[9]	30-Day Average	1.5 µg/m^3	Atomic Absorption	--	--	--
	Calendar Quarter	--		1.5 µg/m^3	Same as Primary Standard	High-Volume Sampler and Atomic Absorption
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	--	Ultraviolet Fluorescence	0.30 ppm (80 µg/m^3)	--	Spectrophotometry (Pararosaniline Method)
	24 Hours	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	--	
	3 Hours	--		--	0.5 ppm (1300 µg/m^3)	

POLLUTANT	AVERAGING TIME	CALIFORNIA STANDARDS[1]		FEDERAL STANDARDS[2]		
		CONCENTRATION[3]	METHOD[4]	PRIMARY[3,5]	SECONDARY[3,6]	METHOD[7]
	1 Hour	0.25 ppm (655 µg/m^3)		--	--	
Visibility Reducing Particles	8 Hours	Extinction coefficient of 0.23 per kilometer – visibility of 10 miles or more (0.07 - 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70%. Method: Beta Attenuation and Transmittance through Filter Tape.		No NAAQS		
Sulfates	24 Hours	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Flourescence			
Vinyl Chloride	24 Hours	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Notes:
1. California standards for ozone, CO (except Lake Tahoe), SO_2 (1 and 24 hour), NO_2, 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. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration in a year, averaged over three 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 one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the EPA for further clarification and current federal policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25 degrees Celsius (°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.
4. Any equivalent procedure that can be shown to the satisfaction of CARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the EPA.
8. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).
9. CARB 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 NAAQS specified for these pollutants.

ppm = part per million
µg/m^3 = micrograms per cubic meter
Source: California Air Resources Board, 2/16/2010.

Regional Regulations

Air pollution does not adhere to political boundaries such as counties; therefore, the California legislature has required CARB to divide the state into 15 separate air quality control regions or basins that have “similar geographical and meteorological conditions and considerations for political boundary lines whenever practicable” (H&SC section 39606[1]).

Air quality control districts are required to develop attainment plans for all non-attainment pollutant categories except particulate matter. The attainment plans are required to reduce non-attainment pollutants (or their precursors) by 5% per year, averaged over a 3-year period, and to develop a program to maintain attainment once it is reached.

The Proposed Project is located in San Bernardino County, in the MDAB, covering an area of the county where MDAQMD has jurisdictional authority for enforcing air quality regulations.

Local Regulations

The MDAQMD is in non-attainment under the NAAQS for ozone and PM_{10}, and the CAAQS for $PM_{2.5}$. Therefore, MDAQMD prepared a Federal 8-Hour Ozone Attainment Plan dated June 9, 2008, for meeting the 8-hour ozone NAAQS by June 2021. MDAQMD developed a PM_{10} attainment plan dated July 31, 1995, to achieve the PM_{10} NAAQS. An attainment plan for $PM_{2.5}$ was not developed; however, the control measures would follow the attainment plan developed by MDAQMD for PM_{10}.

MDAQMD staff developed the *California Environmental Quality Act (CEQA) and Federal Conformity Guidelines* (MDAQMD, 2009) as an advisory document to assist lead agencies, consultants, and project applicants with procedures for addressing air quality impacts in environmental documents under CEQA. The impact criteria listed in these guidelines (see Section 3.2.1) were considered in this analysis.

MDAQMD Rule 403 - Fugitive Dust, applies to the Project site. This rule requires that excessive fugitive dust emissions be controlled by regular watering or other dust preventative measures.

3.2.3 Affected Environment

Climate

The climate of the Project area is characteristic of a desert environment. The large San Gabriel and San Bernardino mountain ranges block the desert from the cool, moist coastal air of the South Coast Air Basin, which lies to the southeast. The Mojave Desert region generally experiences hot, dry summers and mild winters with low annual rainfall averaging 2 to 5 inches per year. Meteorology is influenced by a moderately intense anticyclonic circulation, except during periods of frontal activity during the winter. On average, 20 to 30 frontal systems (storms) move into the MDAB each winter. During the summer, the MDAB is generally influenced by a Pacific subtropical high-pressure cell that sits off the coast of California. Prevailing winds are out of the west and south, tending to a west to east flow across the MDAB.

Existing Air Quality

Table 3.2-B lists the MDAQMD air quality attainment status for each pollutant.

The primary pollutants of concern are ozone, PM_{10}, and $PM_{2.5}$. Ozone is not emitted directly to the atmosphere; it is formed from ozone precursors through a series of complex chemical reactions. The ozone precursors are reactive organic gases (ROGs) and oxides of nitrogen (NO_x). Therefore, any activities associated with the Proposed Project that would contribute to increases in these compounds would be of concern.

Table 3.2-B: MDAQMD Air Quality Attainment Status

POLLUTANT	FEDERAL STANDARD	STATE STANDARD
Ozone - 1 hour	No federal Standard	Non-attainment, Severe-17
Ozone - 8 hour	Non-attainment , Severe-17	Non-attainment, Severe-17

POLLUTANT	FEDERAL STANDARD	STATE STANDARD
PM_{10}	Non-attainment, Moderate	Non-attainment
$PM_{2.5}$	Unclassified/Attainment	Non-attainment
CO	Attainment	Attainment
NO_2	Attainment/Unclassified	Attainment/unclassified
SO_2	Attainment/Unclassified	Attainment
Lead	Attainment	Attainment
Hydrogen Sulfide	Unclassified	Unclassified
Sulfates	Attainment	Attainment
Visibility-reducing Particles	Unclassified	Unclassified

The 1-hour ozone NAAQS was revoked on June 15, 2005.
Source: MDAQMD, CEQA, and Federal Conformity Guidelines, February 2009.

Sensitive Receptors

For air quality impact analyses under CEQA, sensitive receptors are individuals in facilities that house, for at least a portion of the day, the very young, the elderly, and those individuals who may have illnesses or disabilities that may worsen as a result of being exposed to significant and/or excessive levels of air pollution emissions. This definition is used for NEPA purposes in this analysis as well. Typical sensitive receptors are found in hospitals, convalescent homes, schools, day-care centers, and residences. There are no sensitive receptors in the immediate Project vicinity. The nearest sensitive receptor is a residence located approximately 7,000 feet to the west. Sensitive receptor locations to the south and west are located within 1.5 miles of the proposed wind turbine locations, and sensitive receptor locations to the east are within 3 miles of the proposed wind turbine locations. These distances are measured from the location of the closest wind turbine.

Climate Change

Ongoing scientific research has identified the potential impacts on global climate change from anthropogenic (man-made) GHG emissions and changes in biological carbon sequestration due to land management activities. GHGs that contribute to global climate change are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulfur hexafluoride (SF_6), nitrogen trifluoride (NF_3), and hydrofluorinated ethers (HFE). Almost 90 percent of the total GHG emissions in California are in the form of CO_2 (CARB, 2007). The global warming potential of CH_4 and N_2O are 21 and 310 times that of CO_2, respectively. When quantifying GHG emissions, the different global warming potentials of GHG pollutants are usually taken into account by normalizing their rates to a CO_2-equivalent emission rate (CO_2e). Through complex interactions on a regional and global scale, these GHG emissions and net losses of biological carbon sinks cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia, recent industrialization and burning of fossil carbon sources have caused CO_2e concentrations to increase dramatically, and are likely to contribute to overall global climatic changes. The Intergovernmental Panel on Climate Change (IPCC) recently concluded that "warming of the climate system is unequivocal" and "most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations."

Global mean surface temperatures increased nearly 1.8 degrees Fahrenheit (°F) from 1890 to 2006. Models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Northern latitudes (above 24° N) have exhibited temperature increases of nearly 2.1°F since 1900, with nearly a 1.8°F increase since 1970 alone. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

In 2001, the IPCC indicated that by the year 2100, global average surface temperatures would increase 2.5°F to 10.4°F above 1990 levels. The National Academy of Sciences has confirmed these findings, but also has indicated there are uncertainties regarding how climate change may affect different regions. Computer model predictions indicate that increases in temperature will not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures are more likely than increases in daily maximum temperatures. Increases in temperatures would increase water vapor in the atmosphere and reduce soil moisture, increasing generalized drought conditions, while at the same time enhancing heavy storm events. Although large-scale spatial shifts in precipitation distribution may occur, these changes are more uncertain and difficult to predict.

As with any field of scientific study, there are uncertainties associated with the science of climate change. This does not imply that scientists do not have confidence in many aspects of climate change science. Some aspects of the science are known with virtual certainty, because they are based on well-known physical laws and documented trends (EPA 2008).

Several activities contribute to the phenomenon of climate change, including emissions of GHGs (especially carbon dioxide and methane) from fossil fuel development, large wildfires, and activities using combustion engines; changes to the natural carbon cycle; and changes to radiative forces and reflectivity. It is important to note that GHGs will have a sustained climatic impact over different temporal scales. For example, recent emissions of carbon dioxide can influence climate for 100 years.

It may be difficult to discern whether global climate change is already affecting resources in a proposed project area. However, it is possible to identify and discuss what the potential effects could be. It is important to note that projected changes are likely to occur over several decades to a century. Therefore, many of the projected changes associated with climate change may not be measurably discernible within the reasonably foreseeable future.

Existing climate prediction models are global in nature; therefore, they are not at the appropriate scale to estimate potential impacts of climate change on the Project area.

3.2.4 Environmental Consequences

Alternative 1: Proposed Project

Under this alternative, the Proposed Project site would be determined suitable for wind energy development and the BLM would authorize the Project ROW. This suitability determination and its rationale would be reflected in an amendment to the CDCA Plan, and the Proposed Project would be developed.

Construction Emissions

Construction for the Granite Mountain Wind Energy Project would occur over a period of 10 to 12 months. For purposes of construction emissions assessment, construction can be classified into four distinct activities: (1) road construction, (2) road maintenance, (3) WTG foundation construction, and (4) WTG tower erection and generator/substation installation.

On-site emissions generated during construction principally consist of combustible exhaust emissions from the operation of heavy-duty construction equipment and fugitive dust (as PM_{10} and $PM_{2.5}$) from disturbed soil. Off-site emissions during construction consist of combustible exhaust emissions and entrained paved road dust (as PM_{10} and $PM_{2.5}$) from worker commute trips, material delivery trips, and haul truck material removal trips to and from the construction site. According to the Air Quality Analysis (Appendix D) for this Project even with mitigation measures MMAIR1 through MMAIR5, construction of the Proposed Project would exceed the MDAQMD thresholds of significance for PM_{10}, as summarized in Table 3.2-C. Please refer to the Air Quality Analysis in Appendix D for detailed methodology and unmitigated emissions calculations.

Table 3.2-C: Estimated Mitigated Total Annual Construction Emissions

PHASE	CRITERIA POLLUTANTS (TONS PER YEAR)						GREENHOUSE GASES (TONS PER YEAR)	
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Road Construction	0.92	7.12	3.99	0.01	0.36	0.32	702.90	0.37
Road Maintenance	0.20	1.38	0.95	0.00	0.08	0.07	160.82	0.02
Foundations	0.65	4.46	3.21	0.01	0.23	0.20	560.20	0.05
Erection	0.97	7.60	5.64	0.01	0.30	0.26	996.99	0.07
Fugitive Dust (all phases)	n/a	n/a	n/a	n/a	67.47	6.75	n/a	n/a
Maximum Annual Emissions	2.74	20.56	13.80	0.03	68.43	7.60	2,420.90	0.51
MDAQMD Annual Thresholds	25	25	100	25	15	15[1]	10,000[2]	
Exceeds Threshold?	No	No	No	No	YES	No	No	

Source: Air Quality Analysis, Granite Mountain Wind Energy Project, URS 2009 (Appendix D).
[1]PM_{10} threshold is used here since there is no regional threshold for $PM_{2.5}$.
[2]Since neither CARB nor MDAQMD have formally adopted significance threshold for GHGs, the SCAQMD interim threshold was utilized for the purposes of this analysis.
n/a = not applicable

Operational Emissions

It is not anticipated that there would be significant criteria pollutant or fugitive dust emissions from mobile sources during Project operation, such as vehicles and equipment, because of the limited maintenance and operational activities associated with the wind energy generation facility. Furthermore, according to the plan of development (POD, 2009), after completion, the turbine project would generate electricity without air pollution and is expected to result in the overall reduction of an estimated 49 tons of SO_2 and 82 tons of NO_X each year for the Project's life of 25 years or more when compared with the average

power generation mix for the region. Therefore, the beneficial properties of the Proposed Project would offset minimal operational emissions.

Greenhouse Gas Emissions

In 2006, the State of California passed the California Global Warming Solutions Act (AB 32), which requires California to reduce its emissions of CO_2 and other GHGs by 25% to meet 1990 levels by 2020. Legislation was also enacted in 2006 (Senate Bill 1368) that prohibits California electric utilities from constructing power plants or entering into long-term contracts to buy energy from power plants that do not meet a GHG emissions standard.

The California Renewable Portfolio Standard legislation established in 2002 (Senate Bill 1078) and accelerated in 2006 (Senate Bill 107) requires retail sellers of electricity to obtain 20% of their supply of electricity from renewable energy sources, such as wind, by 2010 and 33% of electricity from renewable energy sources by 2020.

Wind is a domestic and local energy source. The Proposed Project would contribute to domestic energy security and – unlike oil, gas, and coal reserves – the supply of wind does not diminish over time. Wind generation produces electricity without consuming fossil fuels or water and does not produce any air emissions, water effluent, or hazardous waste. When the wind blows and electricity is generated by a wind farm it displaces energy generated by fossil fuel power generation facilities. This is because large volumes of electricity cannot be stored and to maintain the balance between the supply and demand for electricity, the real-time output required from fossil fuel plants would be reduced by the amount of renewable generation going into the electrical grid. According to the POD, the Proposed Project would, through displacement of conventional power generation, result in a savings of 65,733 metric tons of CO_2 and 43,200,000 gallons of water each year for the Project's life of 30 years or more when compared with electricity generated by the average fuel mix for the Project region. Therefore, the Project's long-term displacement of emissions from conventional energy generation would by far offset the short-term 2,420.90 metric tons of CO_2 and 0.51 metric tons of CH_4 from Project construction.

Air Quality Plans

The Air Quality Management Plan for the MDAB sets forth a comprehensive program that will lead the Basin into compliance with all federal and state air quality standards. The Air Quality Management Plan control measures and related emission reduction estimates are based upon existing and future air pollution emissions resulting from employment and residential growth projections. The Proposed Project would not conflict with or obstruct implementation of the Air Quality Management Plan.

Air Quality Standards

The Proposed Project is within the jurisdiction of the MDAQMD, which has developed thresholds of significance with which the Project must comply. As shown in Table 3.2-C, Estimated Total Annual Construction Emissions, the Project's construction emissions do not exceed any applicable thresholds of significance. As discussed previously, the Project's operational emissions would be minimal and would be offset by the displacement of emissions from conventional power generation due to the operation of the Project. The Proposed Project would not violate any air quality standards or contribute substantially to emissions regulated under an existing or projected air quality standard, and impacts are less than significant.

Non-attainment Pollutants

The portion of the MDAB within which the Proposed Project is located is designated as a non-attainment area for $PM_{2.5}$ under California standards, and as a non-attainment area for ozone and PM_{10} under federal standards. Section 21100(e) of CEQA states that "previously approved land use documents including, but not limited to, general plans, specific plans, and local coastal plans, may be used in cumulative impact analysis." This approach is appropriate under NEPA as well. In addressing cumulative effects for air quality, the AQMP utilizes approved general plans and, therefore, is the most appropriate document to use to evaluate cumulative impacts of the Proposed Project. This is because the AQMP evaluated air quality emissions for the entire MDAB using a future development scenario based on population projections and set forth a comprehensive program that would lead the region, including the Project site, into compliance with all federal and state air quality standards. The Project is in compliance with the AQMP. Project emissions are below all applicable MDAQMD established thresholds of significance and are considered less than significant; therefore, the Project's cumulative impact to air quality would be less than significant.

Sensitive Receptors

MDAQMD requires that the following project types proposed for sites within the specified distance to an existing or planned sensitive receptor land use must be evaluated using more detailed significance threshold criteria: any industrial project within 1,000 feet; a distribution center (40 or more trucks per day) within 1,000 feet; a major transportation project (50,000 or more vehicles per day) within 1,000 feet; a dry cleaner using perchloroethylene within 500 feet; or a gasoline dispensing facility within 300 feet. The Proposed Project does not involve any of these project types, nor is it within the specified distance to any sensitive receptor land use. The nearest sensitive receptor is located approximately 7,000 feet to the west. Sensitive receptor locations to the south and west are located within 1.5 miles of the proposed wind turbine locations. Sensitive receptor locations to the east are within 3 miles of the proposed wind turbine locations. These distances are measured from the location of the closest wind turbine. Therefore, the Proposed Project would not expose sensitive receptors to substantial pollutant concentrations, and impacts are less than significant.

Objectionable Odors

The Proposed Project does not propose land uses typically associated with emitting objectionable odors (i.e., wastewater treatment plants, chemical plants, composting operations, refineries, landfills, and dairies). Potential odor sources associated with the Proposed Project may result from equipment exhaust during construction activities. These emissions would be temporary, short-term, and intermittent in nature and would cease upon completion of construction. Because odors would be temporary and would disperse rapidly with distance from the source, construction-generated odors would not result in the frequent exposure of nearby receptors to objectionable odorous emissions. No significant odors are anticipated during Project operation. Accordingly, odors associated with construction and operation of the Proposed Project would be less than significant.

Alternative Access Route 1A

The construction of either proposed access alternatives, Route 1A or Route 1B, would generate similar emissions, with the exception of fugitive dust emissions (PM_{10} and $PM_{2.5}$). The same construction equipment would be utilized for either Route 1A or Route 1B; thus, the construction equipment emissions estimations presented in Table 3.2-C are applicable to both proposed alternatives.

Since Access Route 1A has a length of 8.7 miles (an increase of 4.3 miles over the Proposed Project), there would be an increase in vehicular travel on unpaved roads. Access Route 1A also contributes to the total disturbance of 219.7 acres of land (an increase of 19.6 acres over the Proposed Project). The increased vehicular travel and increased disturbed land correlates to an increase of 15.48 tons of mitigated PM_{10} and 1.55 tons of mitigated $PM_{2.5}$ during project construction. Detailed analysis and explanation of the methodology utilized can be found in the Air Quality Analysis for this Project (Appendix D, Section IX: Alternative Access Route).

Alternative Access Route 1B

Environmental impacts are the same as those of Alternative Access Route 1A, see the analysis above.

Alternative Jasper Substation 1A – Public Land

The construction of either of the proposed substation locations would generate similar emissions. The same construction equipment would be utilized for either location, and thus, the construction emissions estimations during the WTG tower erection and generator/substation installation phase presented in Table 3.2-C is applicable to both of the proposed alternatives. The construction emissions from the Alternative Jasper Substation and other aspects of the Proposed Project would still exceed the MDAQMD PM_{10} thresholds of significance.

Alternative Jasper Substation 1B – Private Land

Environmental impacts are the same as those of Substation Alternative 1A, see the analysis above.

Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development, ROW Application Denied, and CUP Not Approved

Under this alternative, BLM would amend the CDCA Plan to determine that the site is suitable for wind energy development, but would deny the ROW application for the Proposed Project, and the County would not approve the CUP for the Proposed Project. The site would remain in its present condition consisting of vacant desert lands, and impacts to air quality would not occur.

Alternative 3: Action on Amendment to CDCA Plan Determines Site Unsuitable for Wind Energy Development

Under Alternative 3, wind energy development would not be allowed and no changes would occur to the current Project site. BLM-managed public lands and private lands would continue to be vacant and undisturbed until such time as a permitted use or subsequent amendment to the CDCA Plan is approved. No construction activities would occur; therefore, no impacts to air quality in the Project area would occur as a result of the construction and operation of the Proposed Project.

Alternative 4: No Action on Site Suitability and Proposed Project

Under this alternative, no changes to the current Project site or area would occur. BLM-managed public lands and private lands would continue to be vacant and undisturbed. No construction activities would occur; therefore, no impacts to air quality in the Project area would occur as a result of the construction and operation of the Proposed Project.

3.2.5 Avoidance, Minimization, and/or Mitigation Measures

The Proposed Project would implement recommended PEIS BMPs, which were adopted as part of the proposed Wind Energy Development Program to ensure minimal impact to air quality. In addition to the BLM BMPs, Project-specific mitigation measures evaluated for their ability to eliminate or reduce the potential substantial adverse impacts related to air quality were developed for the Proposed Project.

BLM BEST MANAGEMENT PRACTICES

Construction BMPs

- All control and mitigation measures established for the Project in the POD and the resource-specific management plans that are part of the POD shall be maintained and implemented throughout the construction phase, as appropriate.
- The area disturbed by construction and operation of a wind energy development project (i.e., footprint) shall be kept to a minimum.
- The number and size/length of roads, temporary fences, lay-down areas, and borrow areas shall be minimized.
- Topsoil from all excavations and construction activities shall be salvaged and reapplied during reclamation.
- All areas of disturbed soil shall be reclaimed using weed-free native grasses, forbs, and shrubs. Reclamation activities shall be undertaken as early as possible on disturbed areas.
- All electrical collector lines shall be buried in a manner that minimizes additional surface disturbance (for example, along roads or other paths of surface disturbance). Overhead lines may be used in cases where burial of lines would result in further habitat disturbance.
- Erosion controls that comply with county, state, and federal standards shall be applied. Practices such as jute netting, silt fences, and check dams shall be applied near disturbed areas.
- Dust abatement techniques shall be used on unpaved, unvegetated surfaces to minimize airborne dust.
- Speed limits (e.g., 20 mph) shall be posted and enforced to reduce airborne fugitive dust.
- Construction materials and stockpiled soils shall be covered if they are a source of fugitive dust.
- Dust abatement techniques shall be used before and during surface clearing, excavation, or blasting activities.
- Foundations and trenches shall be backfilled with originally excavated material as much as possible. Excess excavation materials shall be disposed of only in approved areas or, if suitable, stockpiled for use in reclamation activities.

PROJECT-SPECIFIC MITIGATION MEASURES

Construction Mitigation

MMAIR1: During clearing, grading, earth-moving, excavation operations, and vehicular travel on unpaved roads, the contractor shall be responsible for ensuring that excessive fugitive dust emissions are controlled by regular watering or other dust preventative measures using the following procedures, as specified by the MDAQMD, including, but not limited to, Rule 403, Fugitive Dust:

- Construction personnel shall not cause or allow the emissions of fugitive dust from any transport, handling, construction or storage activity so that the presence of such dust remains visible in the atmosphere beyond the property line of the emission source.
- Construction personnel shall take every reasonable precaution to minimize fugitive dust emissions from wrecking, excavation, grading, clearing of land, and solid waste disposal operations.
- Construction personnel shall take every reasonable precaution to prevent visible particulate matter from being deposited upon public roadways as a direct result of their operations. Reasonable precautions may include, but are not limited to, the removal of particulate matter from equipment by washing on-site prior to movement on paved streets or the prompt removal of any material from paved streets onto which such material has been deposited by use of a street sweeper or similar equipment if determined necessary by County or state enforcement personnel.

MMAIR2: During construction activities, construction personnel shall control fugitive dust emissions by applying dust suppressant to disturbed areas and unpaved roads as needed to ensure emissions do not exceed established limits.

MMAIR3: All trucks hauling excavated or graded material off-site shall comply with State Vehicle Code Section 23114, with special attention to Sections 23114(b)(F), (e)(2), and (e)(4), as amended, regarding the prevention of such material spilling onto public streets. Section 23114 states that “a vehicle shall not be driven or moved on any highway unless the vehicle is so constructed, covered, or loaded as to prevent any of its contents or load from dropping, sifting, leaking, blowing, spilling, or otherwise escaping from the vehicle.”

MMAIR4: All construction equipment shall be properly and routinely maintained by construction personnel as recommended by manufacturer manuals to control exhaust emissions.

MMAIR5: Construction personnel operating vehicles on-site shall restrict vehicle engine idling when equipment is not in use to five minutes unless more time is necessary according to the engine manufacturer’s specifications or for safety.

MMAIR6: Prior to grading and construction activities, the applicant shall prepare a Dust Control Plan and a Re-Vegetation Plan to be reviewed and approved by the BLM and County that addresses the following:

- Soil stabilization practices;
- Control practices to reduce wind erosion of soil stockpiles and construction areas;

- Standard construction and operation practices to minimize dust; and
- Stabilization of soil in areas of disturbance by establishing appropriate vegetation using the appropriate native plant species found within the study area.

3.2.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented

Implementation of the mitigation measures and BMPs and compliance with all regulations set forth in the regulatory settings of this section would be applied to the Proposed Project to minimize air quality impacts to the maximum extent possible.

According to the Air Quality Analysis for this Project (please refer to Appendix D), construction of the Proposed Project would exceed the MDAQMD thresholds of significance for PM_{10}, even after implementation of mitigation measures MMAIR1 through MMAIR6. This would be considered an impact under CEQA; however, no Federal Conformity Analysis is required because emissions are less than the NAAQS for PM_{10}. Table 3.2-D summarizes the total annual construction emissions from the Project.

Table 3.2-D: Estimated Total Annual Construction Emissions

PHASE	CRITERIA POLLUTANTS (TONS PER YEAR)						GREENHOUSE GASES (TONS PER YEAR)	
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Road Construction	0.92	7.12	3.99	0.01	0.36	0.32	702.90	0.37
Road Maintenance	0.20	1.38	0.95	0.00	0.08	0.07	160.82	0.02
Foundations	0.65	4.46	3.21	0.01	0.23	0.20	560.20	0.05
Erection	0.97	7.60	5.64	0.01	0.30	0.26	996.99	0.07
Fugitive Dust (all phases)	n/a	n/a	n/a	n/a	67.47	6.75	n/a	n/a
Maximum Annual Emissions	2.74	20.56	13.80	0.03	68.43	7.60	2,420.90	0.51
MDAQMD Annual Thresholds	25	25	100	25	15	15[1]	10,000[2]	
Exceeds Threshold?	No	No	No	No	YES	No	No	

Source: Air Quality Analysis, Granite Mountain Wind Energy Project, URS 2009 (Appendix D).
[1]PM_{10} threshold is used here since there is no regional threshold for $PM_{2.5}$.
[2]Since neither CARB nor MDAQMD have formally adopted significance thresholds for GHGs, the SCAQMD interim threshold was utilized for the purposes of this analysis.
n/a = not applicable

3.3 VISUAL RESOURCES

This section evaluates the environmental consequences and discusses the affected environment of the Proposed Project on the aesthetics and visual resources surrounding the Granite Mountain Wind Energy Project (**Figure 3.3-1**). The analysis identifies the significance of those impacts and mitigation measures where appropriate and satisfies the requirements of NEPA and CEQA. This section summarizes the Visual Impact Assessment for the Proposed Project, which is presented in Appendix E.

3.3.1 Impact Criteria

Visual resources guidelines from the agencies listed in Section 3.3.2 were used in this analysis. Because the Proposed Project is located primarily on BLM-managed public land, BLM Visual Resource Management (VRM) system guidelines were applied. Similarly, CEQA guidelines and guidance from the County (including the community of Lucerne Valley) and the Town of Apple Valley were considered.

The potential for direct and indirect impacts on visual resources is assessed with respect to six criterions, summarized below:

- A contrast rating that does not meet VRM objectives, as developed by the BLM. Each VRM classification has a level or allowable contrast when comparing pre and post Project views. Should the contrast be identified as greater than the allowable contrast, an impact must be identified.
- Substantial adverse effects on a scenic vista.
- Substantial damage to scenic resources, including, but not limited to, trees, rocks, outcroppings, and historic buildings, within a state scenic roadway.
- Substantial degradation of existing visual character or quality of the site and its surroundings.
- Creation of a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

3.3.2 Regulatory Setting

Federal Regulations

Federal Land Policy and Management Act

Section 102 (a)(8) of FLPMA places an emphasis on the protection of the quality of scenic resources on public land. To meet its responsibility to maintain the scenic value of public lands, the BLM has developed the VRM system, described in detail below. The VRM system is implemented through the resource management plan (RMP) and the management framework plan process.

BLM Visual Resource Management

BLM's VRM system recognizes that public lands have a variety of visual values that warrant different levels of management. Visual values are identified through the VRM inventory (BLM Manual Section 8410) and are considered with other resource values in the RMP process. Visual management objectives are established in RMPs in conformance with the land use allocations made in the plan. These are specific objectives, which provide the standards for planning, designing, and evaluating future management projects.

The contrast rating system (BLM Manual Section 8431) provides a systematic means to evaluate proposed projects and determine whether these projects conform to the approved VRM objectives. It also provides a means to identify mitigating measures that can be taken to minimize adverse visual impacts. The CDCA Plan of 1980 was developed prior to BLM's adoption of the VRM program. A visual inventory was not undertaken for the entire CDCA Plan area. VRM analyses, including inventories, are completed individually for projects within the CDCA Plan area that may potentially impact visual resources. All projects are to be consistent with the VRM objectives, *BLM Land Use Handbook* guidance, and the CDCA Plan.

The *BLM Land Use Planning Handbook* (BLM, 2005) requires that VRM management classes be identified to establish landscape management objectives for a variety of surface-disturbing activities, based on inventories of visual resources as well as management considerations for other potential land uses (such as wind energy development). The VRM management classes may differ from VRM inventory classes based on the management priorities for land uses in an area. However, the VRM management classes do not exclude or preclude land uses, including opportunities for development of wind energy in areas with high wind energy resource potential.

The VRM management class designations must be carefully considered in areas with high wind energy resource potential. This is especially important when considering the differences in resource management constraints relative to VRM Class II and Class III management classes in a planning area. In many cases, VRM management objectives designated at the land use planning level can be met through strategic placement of facilities and thoughtful design treatments that visually integrate the facilities into the landscape setting. However, because of the nature of the size, placement, and color of wind turbines, it may not be possible to successfully integrate the facilities into the landscape setting.

The BLM VRM system places landscape into four classes (BLM, 1986):

Class I: The objective of this class is to preserve the existing character of the landscape. Changes to the landscape character should not be evident.

Class II: The objective of this class is to retain the existing character of the landscape. Changes to the landscape character may attract slight attention but should be subordinate to the visual setting.

Class III: The objective of this class is to partially retain the existing character of the landscape. Changes to the landscape character may begin to attract attention but should not dominate the visual setting.

Class IV: The objective of this class is to allow for activities that modify the existing character of the landscape. Changes to the landscape character may attract attention and dominate the visual setting. However, these activities should minimize changes to the landscape where possible.

Federal Aviation Administration (FAA)

The FAA has strict policies related to project features over 200 feet tall. Based on FAA review of the proponent's Notice of Proposed Construction or Alteration form, the FAA would make a finding on whether or not the Project would affect the National Airspace System.

Because the Proposed Project meets the height threshold, FAA lighting would be required and its visual impact was examined in this analysis. Other forms of impact avoidance include markers and paint colors or patters.

FAA Advisory Circular 70/7460-1K requires that all airspace obstructions over 200 feet in height or in close proximity to an airfield have obstruction lighting. The tallest structure proposed on-site would be a 428-foot-tall wind turbine, and the tallest transmission pole would be approximately 115 feet high. Since the Proposed Project structures are not below the 200-foot limit, on-site turbines would require obstruction lighting. Not all turbines would require FAA lights. As shown in Figure 3.3-2, 13 of the 28 turbines would require FAA lights.

State Regulations

California Environmental Quality Act

CEQA visual resources guidelines are a recognized way of measuring potential visual impacts. Proposed Project facilities would be considered to have significant aesthetic impacts under CEQA if they were to:

- Have a substantial adverse effect on scenic vistas or substantially degrade the existing visual character or quality of the project sites and their surroundings;
- Substantially degrade the existing visual character or quality of the site or its surroundings;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway; and
- Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

CEQA requires that all feasible mitigation be imposed for any potentially significant environmental effects.

State Scenic Highway Program

Scenic corridor protection programs include policies intended to preserve the scenic qualities of the highway corridor, including regulation of land use and density of development, detailed land and site planning, control of outdoor advertising (including a ban on billboards), careful attention to and control of earthmoving and landscaping, and careful attention to design and appearance of structures and equipment (California Streets and Highways Code Section 260 *et seq*.). These policies include:

- Protect from encroachment of inappropriate land uses, such as junkyards, dumps, rendering plants, and gravel pits.
- Mitigate uses that detract from scenic values by proper siting, landscaping, or screening.
- Prohibit billboards and regulate on-site signs so that they do not detract from scenic views.
- Make development more compatible with the environment by requiring building siting, height, colors, and materials that are harmonious with the surroundings.

- Regulate grading to prevent erosion and cause minimal alteration of existing contours and to preserve important vegetative features along the highway.
- Protect the hillsides by allowing only low-density development on steep slops and along ridge lines.
- Prevent the need for noise barriers (sound walls) by requiring a minimum setback for residential development adjacent to a scenic highway.

Local Regulations

The regulatory documents relevant to visual resource impacts include the County of San Bernardino 2007 Development Code and County of San Bernardino General Plan.

Protection of scenic and visual resources in the County is acknowledged under several land use standards within the San Bernardino General Plan:

- Land Use Element (Section II): The County will have a compatible and harmonious arrangement of land uses by providing a type and mix of functionally well-integrated land uses that are fiscally viable and meet general social and economic needs of the residents. The design and siting of new development will meet locational and development standards to ensure compatibility of the new development with adjacent land uses and community character.
- Open Space Element (Section IV): No development of any kind, including resource extraction, shall be approved that would destroy or seriously diminish the visual quality of existing sand dunes. Hillside development must be compatible with natural features and the ability to develop the site in a manner that preserves the integrity and character of the hillside environment, including, but not limited to, consideration of terrain, landform, access needs, fire and erosion hazards, watershed and flood factors, tree preservation, and scenic amenities and quality.
- Conservation Element (Section V): Future land development practices must be compatible with the existing topography and scenic vistas and protect the natural vegetation. Ridgeline development that would substantially detract from the scenic quality of major ridgeline viewsheds must be minimized.

A “scenic route” is a roadway that has scenic vistas and other scenic and aesthetic qualities that over time have been found to add beauty to the County. County-designated scenic routes include SR-247 and SR-18.

Lighting Policies

The County has a Dark Sky Ordinance (No. 3900), which is established to preserve dark night skies in rural areas. Section 1 states the following: “The residents of much of the Mountain and Desert Areas of the County currently enjoy a dark night sky unlike the residents of the more populated areas within the County. To preserve this dark night sky, two cities within the County and a portion of the Morongo Basin have adopted ordinances setting outdoor lighting standards. This ordinance is consistent with the cities’ ordinances, the previously adopted County ordinance, and the desires of the residents of the mountain and desert areas to provide broader protection of the night sky.”

The ordinance creates standards to limit glare and excessive outdoor lighting applicable to all structures and free-standing outdoor light fixtures within residential, commercial, and industrial land use districts in the desert and mountain regions.

Also within the County of San Bernardino General Plan, several policies are established to preserve dark night sky as a natural resource in rural areas. The Conservation Element (Section V) contains policies for the desert and mountain regions, which include the protection of the night sky by providing information about and enforcing existing ordinances and that all outdoor lighting, including street lighting, shall be provided in accordance with the Night Sky Protection Ordinance and shall only be provided as necessary to meet safety standards.

3.3.3 Affected Environment

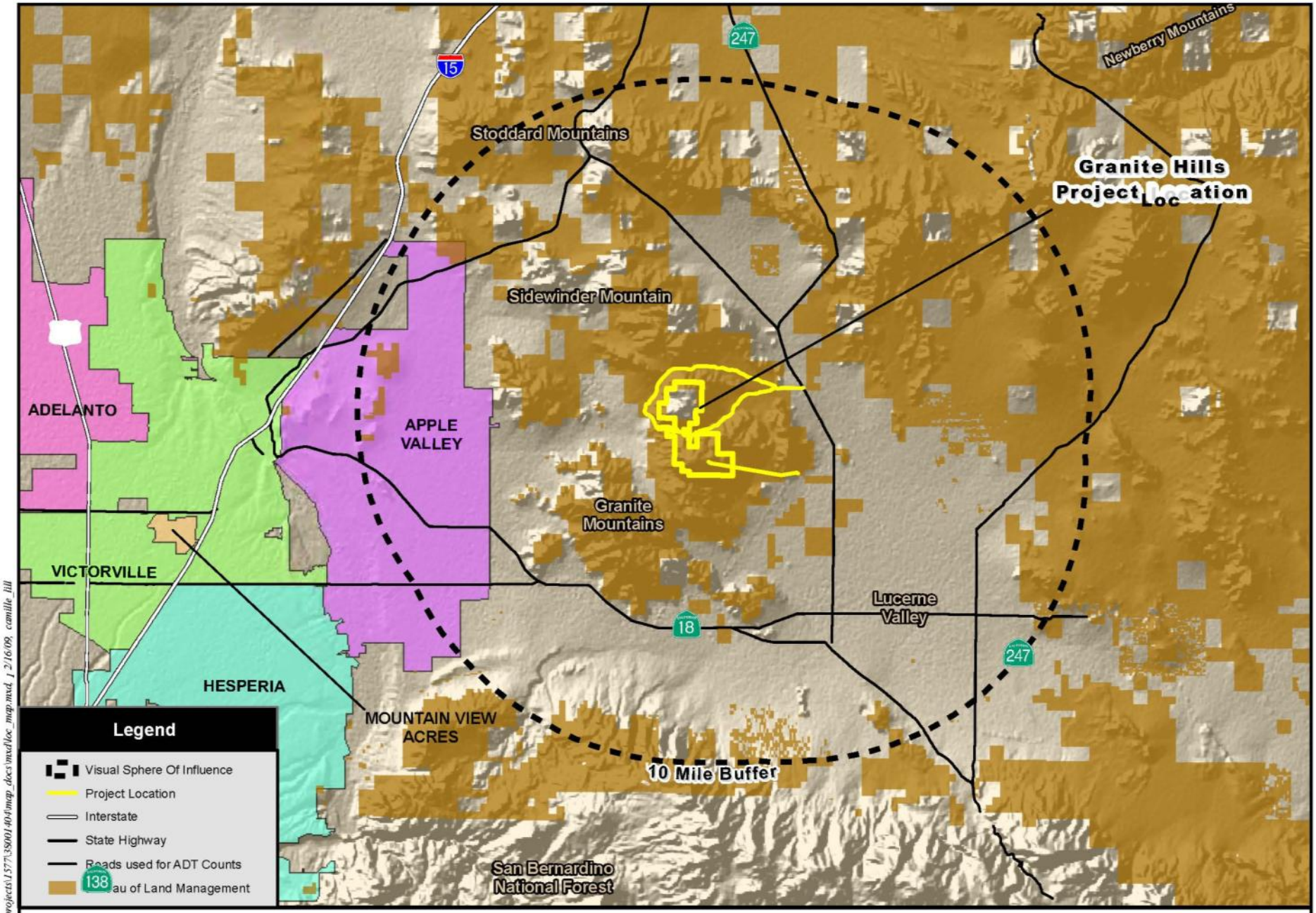
This section describes the visual resources in the vicinity of the Proposed Project. While the BLM VRM methodology is useful for describing conditions of the immediate area surrounding the Project site, this analysis was enhanced by incorporating Federal Highway Administration (FHWA) aesthetic guidelines (FHWA, 1988), which focus not only on a project footprint but look at all potential views, including foreground, middleground, and background views. Thus, the affected environment contains not only the Project site, but all areas within a specified radius. A description of the regional landscape setting, the anticipated visual sphere of influence (VSOI) of the Proposed Project, and the inventory methods and results are included.

Regional Setting

The Project site (**Figure 3.3-1**) is located on public land administered by the BLM and private land within unincorporated San Bernardino County. SR-247 and SR-18 are to the east and south of the Project site, respectively. The Proposed Project includes wind turbines; associated facilities; two alternatives for access road routes (Route 1A and 1B) extending from the Spinel Street turn-off of SR-247; a 3.2-mile transmission line extending from the southern portion of the site and heading east toward a tie-in with the existing SCE transmission line; and two alternatives for an interconnect substation (Jasper Substation 1A or 1B) (**Figure 3.3-2**). The entirety of the Project site is undeveloped ridgelines located within the Granite Mountains.

Existing uses include primarily recreational activities: hiking, camping, equestrian activities, and hunting/shooting, although no established trails were found on-site. One well-maintained dirt road (Johnson Road) runs adjacent to the north side of the Project site. Other dirt roads with varying degrees of maintenance run towards the Project site. However, no existing roads on the site itself (excluding the access road alternatives and transmission line) were identified.

This page intentionally left blank.

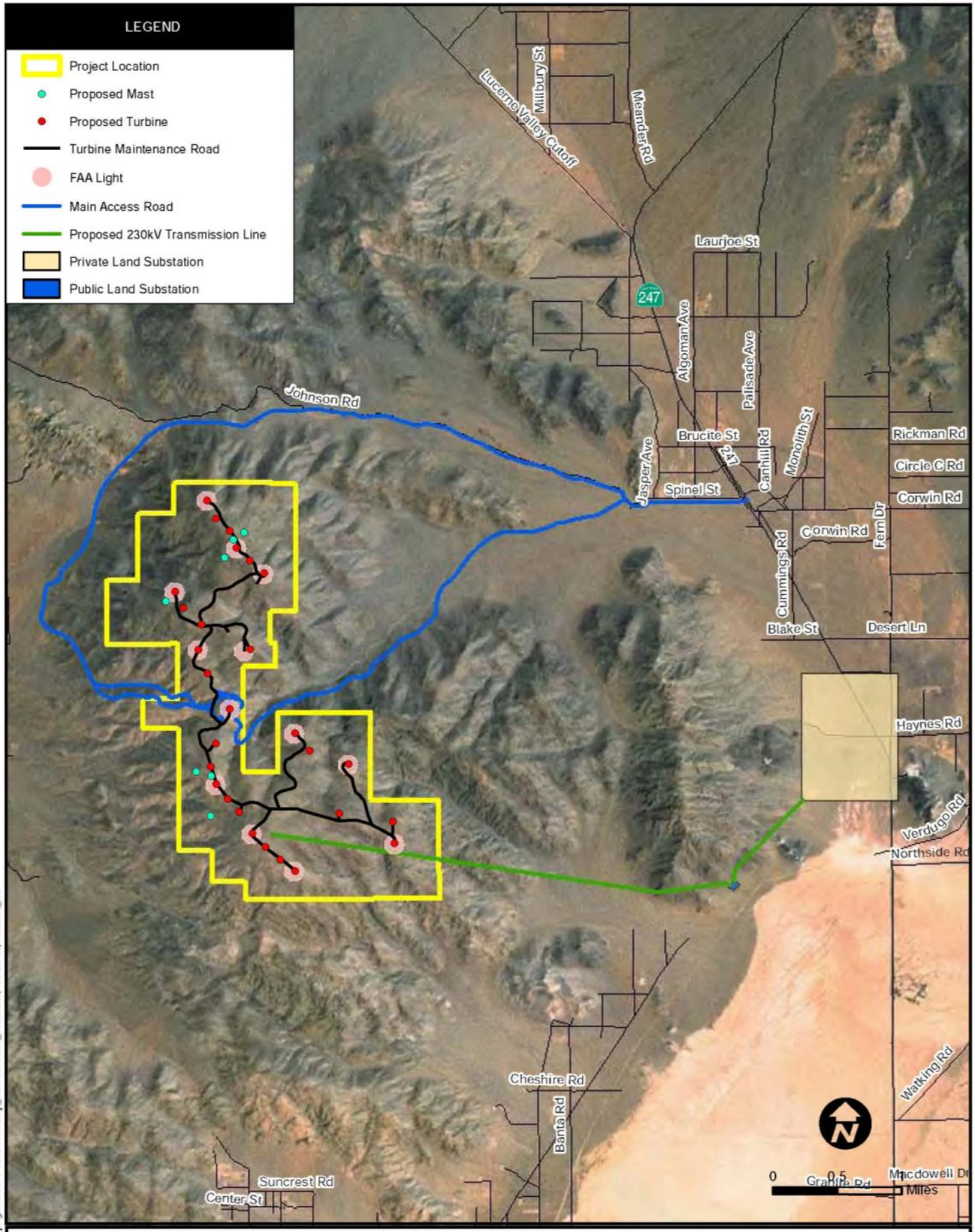


0 2.25 4.5 Miles

GRANITE MOUNTAIN WIND ENERGY PROJECT
PROJECT VICINITY

Figure 3.3-1

Path: G:\gis\projects\1577\38001404\map_docs\mxd\loc_map.mxd, 1 2/16/09, camille_hill



Path: G:\gis\projects\1577\38001404\map_docs\mxd\Site_Plan.mxd, 01/22/10, camille_hill

GRANITE MOUNTAIN WIND ENERGY PROJECT
PROJECT LAYOUT

Figure 3.3-2

Nearby land uses include open space, agricultural lands, ranch lands, and semi-urban developed areas with residential and commercial development (Lucerne Valley, Apple Valley, and other commercial development outside of the Project area along the Interstate 15 [I-15] corridor), recreational open space (playing fields and parks, Johnson Valley Off Highway Vehicle [OHV] Area, Stoddard Valley OHV Area, San Bernardino National Forest), and some industrial development (transmission corridors, mining activities). Several large SCE transmission line corridors extend across the landscape, crossing both SR-18 and SR-247.

The Project area is visible from I-15; however, variations in topography and the lower elevation of I-15 obscure views to the Project site. Other areas outside of the VSOI that may have distant, obstructed, or partial views to the Proposed Project include the city of Victorville to the west and Homestead Valley (a community within unincorporated San Bernardino County) to the southeast.

The Project site is located in an unincorporated region of San Bernardino County, in an area of low population (**Figure 3.3-3**). The current population within the Project vicinity (10-mile radius) is approximately 11,812, including residents within the community of Lucerne Valley and portions of the Town of Apple Valley.

Topography in the Project area is a mountainous landscape with varying ridgelines and valleys, allowing for open, expansive views of distant features from higher elevations. Site elevations range from approximately 3,000 feet above mean sea level (msl) to over 5,000 feet above msl. Topographic features within the viewshed of the Project site include the Granite Mountain, Sidewinder Mountain to the north, and San Gabriel Mountains to the south.

Visual Sphere of Influence

The VSOI identifies who has a view of any element of the Proposed Project. Typically, a 10-mile radius is implemented because views over 20 miles are considered to be “distant” and seldom have the ability to be foreseen as “significant” when identifying potential impacts to visual resources. However, due to the visibility of Project features (428-foot-tall wind turbines, transmission lines, and others), sensitive receptors in a wider vicinity outside of the 10 miles were also considered in this analysis (see **Figure 3.3-2** for a general layout of Project components). The Project was reviewed for sensitive resources within the following view ranges/distance zones from the FHWA guidelines:

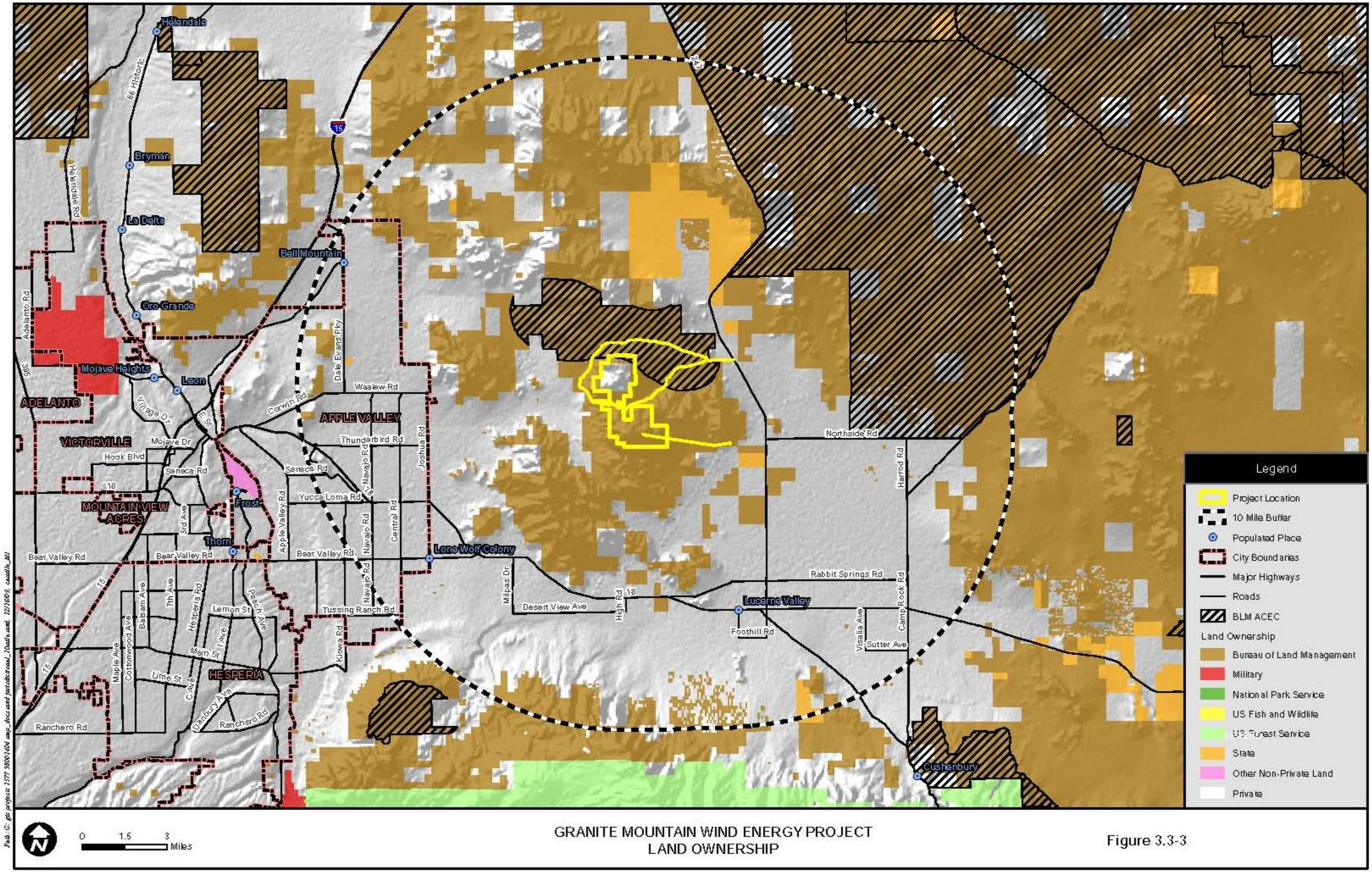
- Foreground: 0 to 0.5 mile from the observer’s position. At this distance, the observer can view details of trees, shrubs, wildflowers, and animals.
- Middleground: 0.5 to 5 miles from the observer’s position. At this distance, the observer can see forest stands, natural openings, masses of shrubs, and rock outcrops.
- Background: 5 miles to horizon from the observer’s position. At this distance, the observer can view mountain peaks, ridgelines, and patterns of forest stands and openings.
- Seldom Seen: Areas that are not visible within the foreground, middleground, and background zones, as well as areas beyond the background zones.

Based on an approximate 10-mile distance limit, the VSOI was refined to account for local viewing conditions, primarily topographic and vegetative screening. While the VSOI boundary contained in the report is demonstrated as a 10-mile radius, areas within the VSOI that were not visible were removed from consideration when identifying sensitive viewing areas. Computer viewshed analyses were conducted (using 30-meter-grid cell resolution, generated from 1:24,000 Digital Elevation Model [DEM] data from the U.S. Geological Survey [USGS]) to identify the sensitive viewing areas within boundaries of the VSOI within the 10-mile limit. The results represent a "typical" viewshed for the Project area. These results were portrayed on Figures **3.3-4** and **3.3-5**.

The Project site is clearly visible from nearby recreational users or residents (within 0.5 mile of the Project site). Middleground and background views exist from SR-247 and SR-18, (within 5.0 miles) and from scattered locations within the surrounding valleys and mountains (5.0 miles and beyond). Beyond the mapped VSOI, the Project would either be not visible due to topography/screening, or of such a small size in the background field of view that potential adverse impacts would not be expected. The highest level of Project visibility exists when the viewer is adjacent to the Project site as a permanent stationary viewer and there is no screening. Conversely, the lowest level of visibility exists, for example, when the viewer is located at greater distances from the site, the viewer is traveling at a high rate of speed, and the viewer is in partially to fully screened conditions.

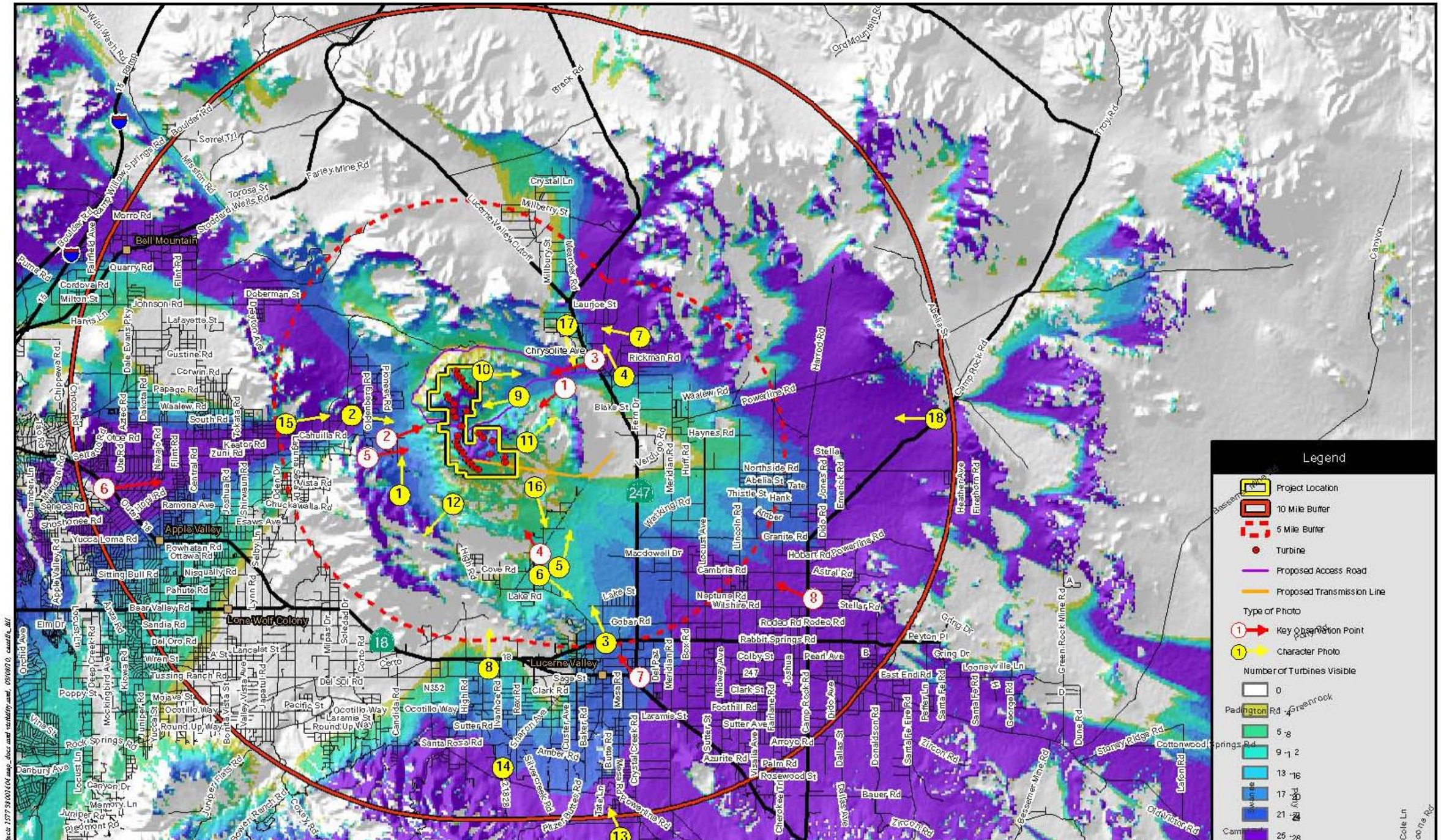
The VSOI also takes into account the visibility of existing development (roadways/highways, residential/commercial land uses, agricultural operations, mining operations, and other industrial development), as well as the most visible Project facilities. Other variables affecting potential visibility of the Project include orientation of the viewer, duration of view, atmospheric conditions, wind-blown dust and/or pollution, lighting (daylight versus nighttime), and visual absorption capability. Visual absorption capability is the extent to which the complexity of the landscape can absorb new elements without changing the overall visual character of the area.

The VSOI was mapped to identify the maximum potential area for adverse impacts of the Project to views from visually sensitive areas and varying levels of Project visibility.



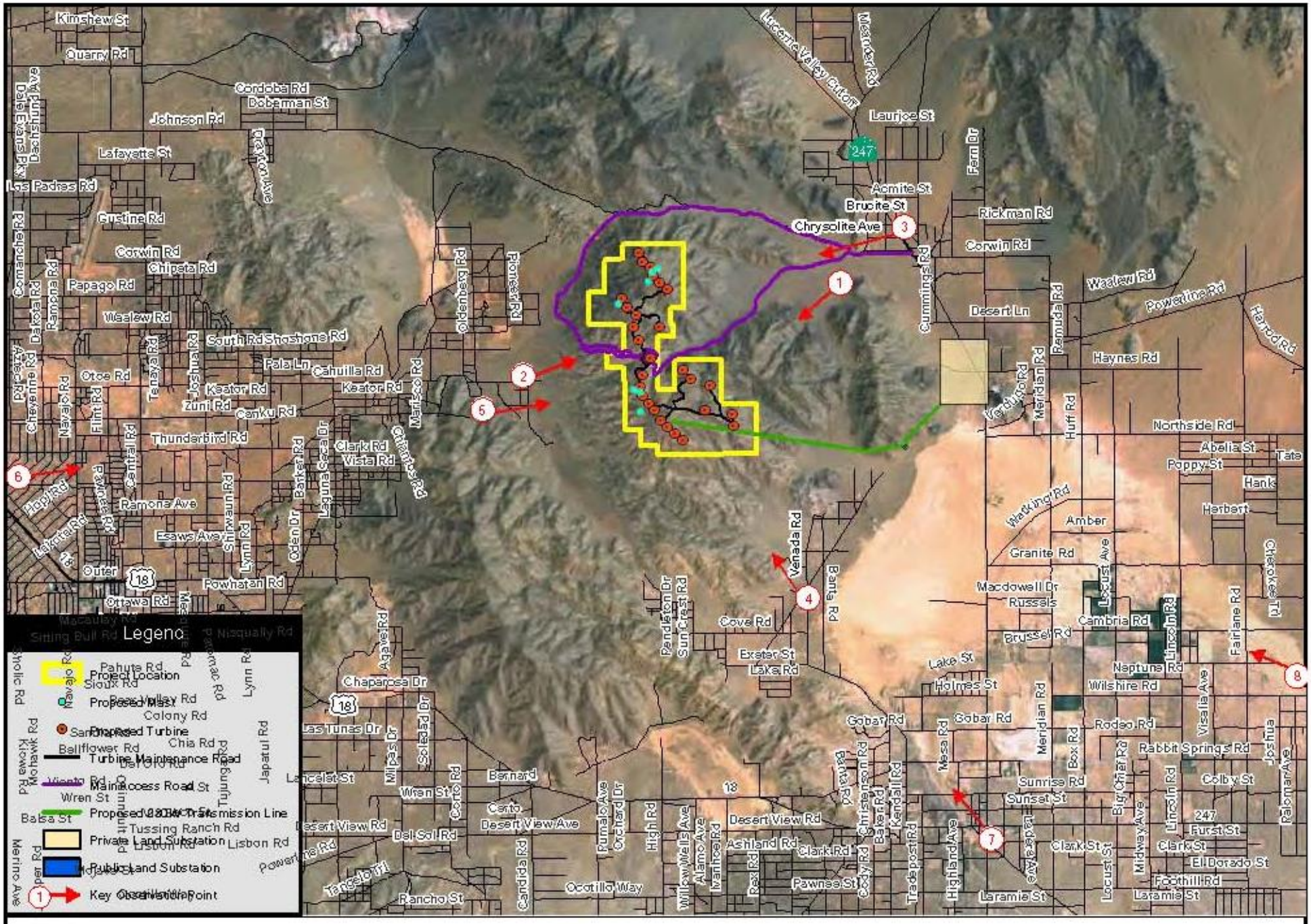
GRANITE MOUNTAIN WIND ENERGY PROJECT
LAND OWNERSHIP

Figure 3.3-3



GRANITE MOUNTAIN WIND ENERGY PROJECT
KOP AND VISIBILITY ANALYSIS

Figure 3.3-4



0 1 2 Miles

GRANITE MOUNTAIN WIND ENERGY PROJECT
KOP LOCATIONS

Figure 3.3-5

This page intentionally left blank.

Sensitive viewing areas were identified and inventoried within the approximate 10-mile radius of the VSOI, as well as sensitive viewing areas in the wider vicinity outside of the radius. The sensitive viewing areas within the VSOI fell into three categories: residential areas, travel routes, and recreation and wildlife areas.

Residential Areas

Scattered residences located to the west, south, and east of the Proposed Project have views to the Project site. The nearest residence to the Project site is located approximately 3,000 feet from the western boundary of the Project site, 10,000 feet from the eastern boundary of the Project site, and 8,000 feet from the southern boundary of the Project site (**Figure 3.3-6**). As these residences are directly adjacent to the elevated position of the Project site, residents have foreground-direct, partially obstructed views to the Project. The aforementioned residences with the closest, most direct views of the Project site are in unincorporated areas of San Bernardino County (both in the community of Lucerne Valley and Apple Valley spheres of influence). Other residences in the area have more distant, obstructed views of the Project site. These other residences include those in the Town of Apple Valley, the community of Lucerne Valley, and other unincorporated areas of the County.

Travel Routes

Travelers along SR-247 and SR-18 will have direct, distant, and partially obscured intermittent views to the site and the transmission line route extending from the site to the existing SCE transmission line. SR-247 is located approximately four miles east of the Project site, at its closest location. SR-18 is located approximately six miles south of the Project site, at its closest location. I-15 is located over ten miles west of the site (outside of the VSOI identified for the Project), but may have distant views of the Project site. Traffic flow was examined for SR-247, SR-18, and other major roads within the VSOI (**Figure 3.3-7**) to determine visual impacts.

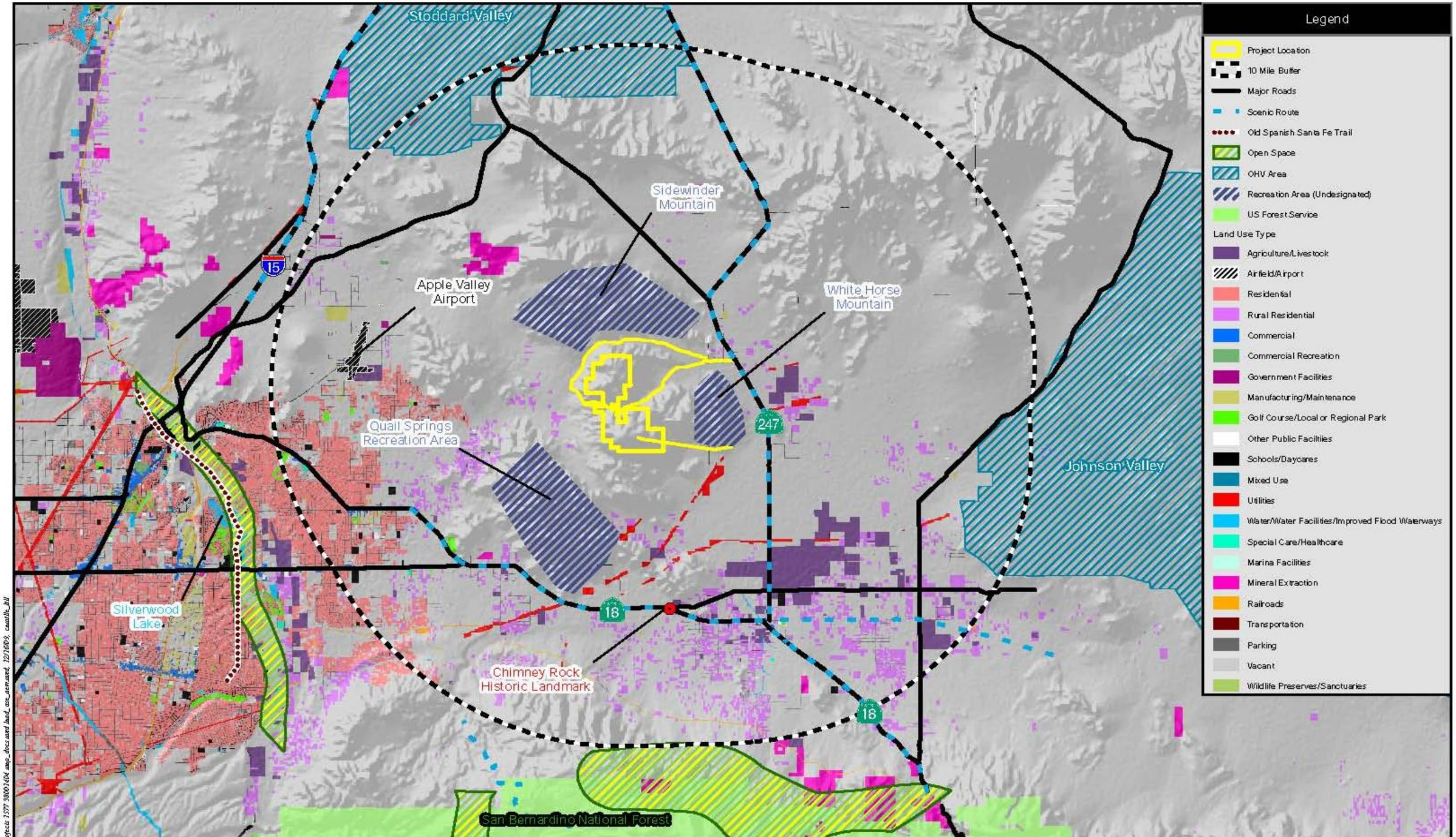
The Apple Valley Airport is located within the VSOI, approximately 7 miles northwest of the Project site. The airport is owned by the County of San Bernardino and is open for public use, with a general aviation functional classification. The airfield is generally used by local residents with small planes and currently supports relatively little air traffic (approximately 103 flights per day) as compared to other small Southern California airports. The landing strip is oriented in a north/south direction, and flights typically travel parallel to the western boundary of the Project site as they land and/or take off.

Recreation/Wildlife Areas

Many recreation destinations were identified within the Project's VSOI. These include scattered undesignated equestrian and hiking trails and hunting areas, such as Quail Spring located southwest of the Project site, White Horse Mountain located to the east of the Project site, and Sidewinder Mountain located to the north. The landscape alternates between tall mountains and ridges with large, expansive valleys, and the recreational uses are as varied as the topography. Recreational uses within the site include hiking, camping, shooting/hunting, rock climbing, and equestrian activities. Other recreational areas further from the Project site include playing fields located both within the Town of Apple Valley and in unincorporated San Bernardino County, popular OHV areas (Johnson Valley and Stoddard Valley), and other OHV, equestrian, hiking, and camping locations on the Juniper Flats plateau and within San Bernardino National Forest.

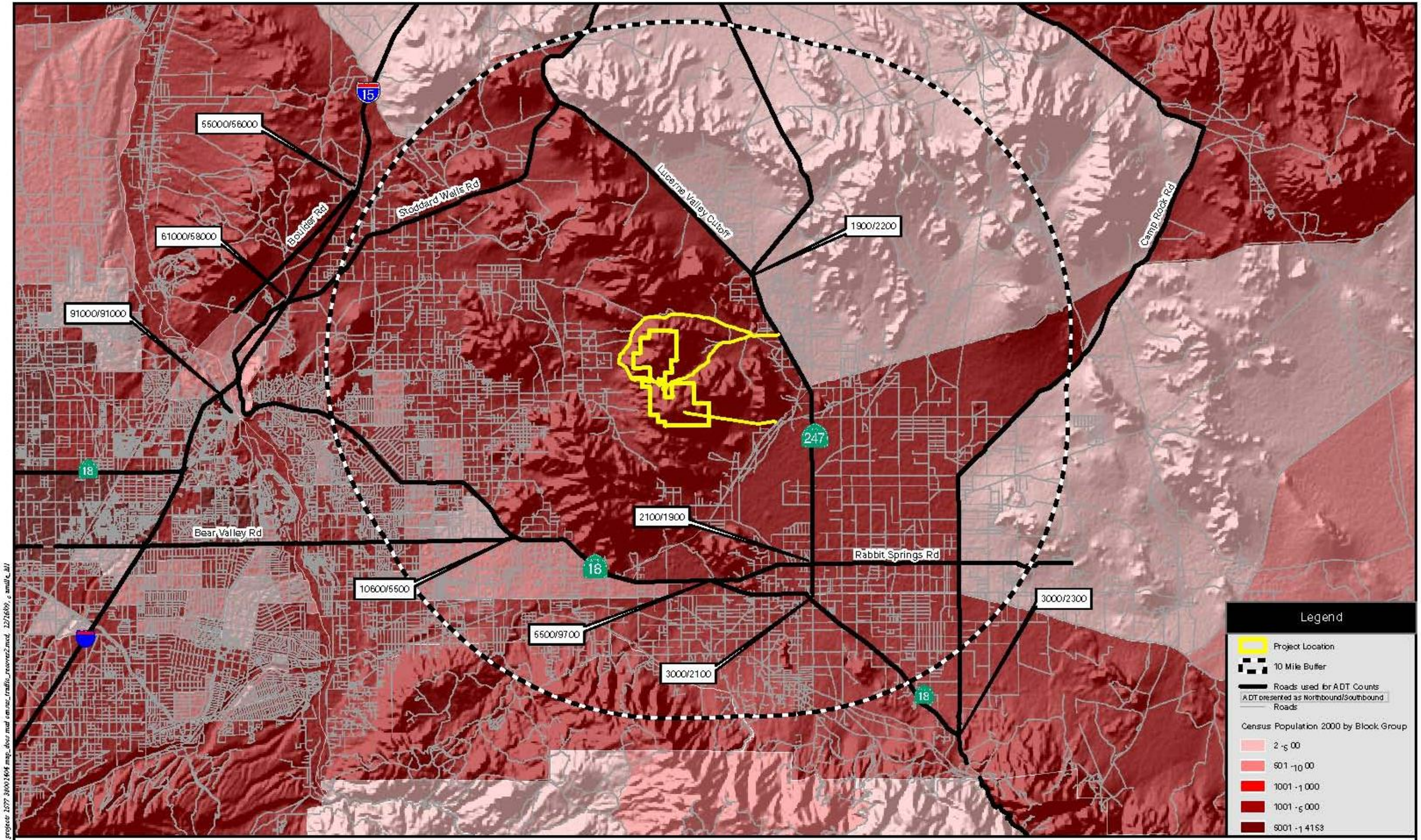
California Historic Landmarks in the area were also evaluated. The Chimney Rock Historical Landmark is located approximately 6 miles south of the Project site (**Figure 3.4-6**). The plaque at the landmark states, “Conflicts between Indians and white settlers over the rich lands of the San Bernardino Mountains culminated in the battle at Chimney Rock on February 16, 1867. Although the Indians defended themselves fiercely, they were forced to retreat into the desert. In the years following, the Indians' traditional mountain food gathering areas were lost to white encroachment.” This landmark would not have views of the Project due to topographic obstructions.

The Santa Fe Trail is located approximately 12 miles east of the Project site (**Figure 3.3-6**). The trail runs from Santa Fe, New Mexico, to Los Angeles, California, through six states: California, Arizona, Nevada, Utah, New Mexico, and Colorado. The approximately 2,700-mile Santa Fe Trail was added to the national trails system in 2002. Because it is located outside of the VSOI, views to the Proposed Project would be distant and potentially obstructed by cultural modifications present between the trail and the Proposed Project.



GRANITE MOUNTAIN WIND ENERGY PROJECT
SENSITIVE RECEPTORS

Figure 3.3-6



GRANITE MOUNTAIN WIND ENERGY PROJECT
CENSUS AND AVERAGE DAILY TRAFFIC COUNT (ADT)

Figure 3.3-7

View Photos

Character photos of the areas surrounding the Project site are intended to show sensitive viewing areas and sensitive visual resources within the surrounding Project area (**Figures 3.3-8** through **3.3-16**). Some of these character photos do not have views to the Project, but they have been included to help identify potentially sensitive visual resources within the region. These photos also help the reader understand the general existing visual character of the surrounding area and the existing land uses within the region. **Figures 3.3-4** and **3.3-5** depict the location of each character photo, including showing whether or not the Project would be visible from that vantage using the results of the aforementioned viewshed model.

Visual Study Inventory Components

Three primary components were inventoried to assess potential visual impacts: 1) an evaluation of scenic quality; 2) identification and consideration of VRM classification; and 3) the identification of sensitive viewing areas.

Scenic Quality

When evaluating scenic quality, both natural and manmade components within the VSOI were considered as they relate to either adding to or detracting from the overall landscape character within a specific setting. Scenic attractiveness levels are established by evaluating the distinctiveness and diversity of a particular landscape setting in relation to landform, vegetation, water, color, effects of adjacent scenery, scarcity of the landscape, and cultural modifications. Scenic quality was inventoried and studied as part of the Interim VRM Classification (see next subsection). Using BLM VRM methods, landscapes are characterized by Classes A through C, as follows:

> Class A: Areas have outstanding diversity or interest; characteristic features of landform, water, and vegetation are distinctive or unique in relation to the surrounding region. These areas contain considerable variety in form, line, color, and texture.
>
> Class B: Areas have above-average diversity or interest, providing some variety in form, line, color, and texture. The natural features are not considered rare in the surrounding region but provide adequate visual diversity to be considered of value.
>
> Class C: Areas have minimal diversity or interest; representative natural features have limited variation in form, line, color, or texture in the context of the surrounding region. Discordant cultural modifications (e.g., substations, transmission lines, and other cultural modifications) can be highly noticeable, which can reduce the inherent value of the natural setting.

The VSOI for the Project area was characterized as Class B or Class C for scenic quality. No landscapes were considered to have distinctive characteristics as defined for Class A levels. Most landscapes within the VSOI were identified as Class C or as landscapes lacking significant natural amenities.

VRM Classification

The Proposed Project area does not have an established VRM classification. Where there is a lack of established VRM classification, interim BLM VRM classification is required. An interim VRM classification was prepared for the Proposed Project area at the request of

BLM and submitted to the BLM Barstow Field Office for review and concurrence. Review and concurrence with the Interim Classification results was signed by the BLM on April 29, 2009, and is provided as Appendix A of the Visual Impact Assessment (Appendix E to this DEIS/EIR). The interim VRM Classification concludes that the classification of the Project is either Class III or Class IV, depending on the area within the Project site, as shown in **Figure 3.3-17**.

Photo Location 1: View of residences in unincorporated San Bernardino County within the City of Apple Valley Sphere of Influence.

Photo Location 2: City of Apple Valley with the Project ridgeline in the background.

GRANITE MOUNTAIN WIND ENERGY PROJECT
CHARACTER PHOTOS OF PROJECT AREA

Figure 3.3-8

Photo Location 3: Traveling northbound on State Route 247.

Photo Location 4: View to Project site from the State Route 18 and State Route 247 Junction.

GRANITE MOUNTAIN WIND ENERGY PROJECT
CHARACTER PHOTOS OF PROJECT AREA

Figure 3.3-9

Photo Location 5: View of existing SCE Transmission Line.

Photo Location 6: View towards Lucerne Valley from Project area.

GRANITE MOUNTAIN WIND ENERGY PROJECT
CHARACTER PHOTOS OF PROJECT AREA

Figure 3.3-10

Photo Location 7: View depicting varying topography in the Project Area.

Photo Location 8: View toward the Project site from Chimney Rock Historical Landmark showing topographical obstructions.

GRANITE MOUNTAIN WIND ENERGY PROJECT
CHARACTER PHOTOS OF PROJECT AREA

Figure 3.3-11

Photo Location 9: View of the Area of Critical Environmental Concern on the Project site.

Photo Location 10: View from the Area of Critical Environmental Concern.

GRANITE MOUNTAIN WIND ENERGY PROJECT
CHARACTER PHOTOS OF PROJECT AREA

Figure 3.3-12

Photo Location 11: View in White Horse Mountain Recreation Area.

Photo Location 12: View in Quail Spring Recreation Area.

GRANITE MOUNTAIN WIND ENERGY PROJECT
CHARACTER PHOTOS OF PROJECT AREA

Figure 3.3-13

Photo Location 13: View from San Bernardino National Forest toward the Project site.

Photo Location 14: San Bernardino National Forest.

GRANITE MOUNTAIN WIND ENERGY PROJECT
CHARACTER PHOTOS OF PROJECT AREA

Figure 3.3-14

Photo Location 15: View from Joshua Road (Apple Valley City limit) towards the Project ridgeline.

Photo Location 16: Lucerne Valley Residences.

GRANITE MOUNTAIN WIND ENERGY PROJECT
CHARACTER PHOTOS OF PROJECT AREA

Figure 3.3-15

Photo Location 17: View of residences to the east of the Project site.

Photo Location 18: View from Johnson Valley OHV Area toward the Project site.

GRANITE MOUNTAIN WIND ENERGY PROJECT
CHARACTER PHOTOS OF PROJECT AREA

Figure 3.3-16

This page intentionally left blank.

Viewer Sensitivity and Sensitive Viewing Locations

While conducting this study, no attempt was made to model varying levels of viewer concern with change in their landscape. Because of the difficulty in inventorying for every individual's sensitivity level, it was assumed for the purposes of this study, that all viewers may have a high level of concern related to changes occurring in landscapes within the VSOI. Generally, a viewer's concern level is associated with, but not limited to, the following factors:

- Viewing location, orientation of view, and duration of view;
- Activity in which the viewer may be engaged (for example, motor-vehicle related recreation activities, bird-watching);
- Visual acuity related to the intensity of visual detail within a landscape setting;
- State of mind or attitude;
- Preconceived expectations related to scenic quality; and
- Inherent values related to scenic quality and familiarity within specific landscape settings.

After discussions with BLM and County staff and a review of surrounding land uses, it was determined that key sensitive viewing areas within the VSOI consisted primarily of low-density residences to the east, south, and west; recreation areas directly adjacent to the Project site; San Bernardino County-designated and state eligible scenic highways SR-247 and SR-18; and other more distant recreation areas and residences.

Residences

Three areas of residences were identified as having the closest, least obstructed views to the site. Because the Project is in an elevated position relative to the residences, these residents have foreground or middleground-direct, primarily unobstructed views to the Project.

The first area of residences is located directly below the Project ridgeline to the west of the Project. These residences are located within the Town of Apple Valley sphere of influence on unincorporated land under the jurisdiction of the County of San Bernardino. They sparsely cover the wide valley at the base of the Project ridgeline. The second area of residences is located to the south of the Project site. The majority of residences in this area have obstructed views due to topographic relief. However, several groupings would have views of both turbines and the proposed transmission line. The third area of residences is located where Spinel Street meets SR-247. All three of these areas are marked by well-maintained dirt roads. Further, many of the residences have ornamental vegetation, which may partially screen views to the Project site. Residences within the town limits of Apple Valley would have distant, background views to the Project site.

Scenic Highways

Travel routes within the VSOI designated as federal, state, or county scenic highways or travel routes subject to aesthetic management goals or objectives include SR-247 and SR-18. Both are designated as scenic highways by the County. Further, the entirety of SR-247 within the Project viewshed is designated as eligible by the State of California. When SR-18 meets SR-247 and heads southeast into the San Bernardino National Forest, it becomes a state-eligible scenic highway. Once it meets SR-38, SR-18 becomes a federal byway

known as Rim of the World Scenic Byway. This is approximately 20 miles from the Project site and is not anticipated to have views to the Project site and was not identified as a sensitive viewing area in relation to the Project.

I-15 extends in a north-to-south orientation just outside of the VSOI (approximately 12 miles west of the Project site). FHWA and California Department of Transportation (Caltrans) standards do not identify I-15 as a designated scenic highway. However, I-15 is considered by the County to be a scenic highway. Views of the elevated Project site from I-15 are lessened by distance and obstructed by cultural modifications (commercial, industrial - including mining, and residential), as well as topography.

Inventory Results

Scenic Quality

The VSOI primarily comprises Class B and Class C landscapes. This is due to the relatively high degree of human modifications present within the VSOI (residential, commercial, and industrial development) and the absence of distinctive natural amenities. Areas inventoried outside of the VSOI (San Bernardino National Forest and its dramatic, imposing stature) possess a higher degree of scenic attractiveness because elevations in topography allow large expansive views of the valley and mountains in the area. Natural amenities adjacent to the Project site have been visually impacted because of the presence of commercial land uses, large transmission systems/networks, agricultural development, and other industrial facilities. However, other areas within the VSOI are lacking many cultural modifications and do have a high degree of distinctive natural amenities.

Within the VSOI, the dramatic changes in topography add to the scenic quality of the region; however, many viewsheds are culturally modified. Further, these dramatic changes in topography also limit distant views in the area. The limited agricultural activities of an assortment of crops add to the distinctiveness of the rural setting and openness of the landscape. Background views of several large mountain ranges add variety within the background-viewing threshold.

Key Observation Points (KOPs)

KOPs are viewing locations chosen to be representative of the most visually sensitive areas that would view the Project. The inventory of KOPs included three components: (1) identification and photo-documentation of viewing areas and potential KOPs; (2) classification of visual sensitivity of KOPs; and (3) description of Project visibility from KOPs. KOPs were identified based on review of available land use data, field inspection, and discussion with BLM and County staff.

Eight sensitive viewing areas were identified as representative of viewers who would be most susceptible to visual impact within their viewshed as a result of the Proposed Project. While it is not feasible to address all areas of aesthetic concerns within the VSOI, the selected KOPs are representative. They were selected to show views from each of the different sensitive receptors. Each location is presented on **Figure 3.3-4**. **Figure 3.3-5** also depicts each KOP location but at a smaller scale and also includes many street labels to give the reader an exact location of where the KOP is located. A brief characterization of these areas is provided below.

KOP 1

White Horse Mountain is approximately 2 miles from the eastern perimeter of the Project site (see also **Figures 3.3-4** and **3.2-3** for KOP location). This view (**Figure 3.3-18** at the end of this section) represents one of the recreational views to the Proposed Project with the greatest potential for impacts. However, because of the nature of this recreation area, screening, in the form of either rock features or topographic variations, is frequent. The viewshed has had virtually no cultural modifications. Because KOP 1 is a remote recreation area, the number of viewers is low.

KOP 2

This image of the Project ridgeline (**Figure 3.3-19**) was taken from the front of a residence in Apple Valley, approximately 2 miles from the Project site (approximately 3,000 feet from the western edge of the Project site) (see also **Figures 3.3-4** and **3.3-5** for KOP location). This KOP includes existing cultural modifications such as utility lines, roads, and the residences.

KOP 3

This image (**Figure 3.3-20**) was taken from northbound SR-247 at Spinel Street (see also **Figures 3.3-4** and **3.3-5** for KOP location). The Project site is located approximately 3 miles east of this KOP. The photo from this location represents traveler views along SR-247, a County-designated scenic highway. The viewshed has already been modified with the presence of the roadways/highways, large transmission corridors and associated structures, and existing development in the immediate vicinity.

KOP 4

This image (**Figure 3.3-21**) of the Project ridgeline was taken from the front of a residence in Lucerne Valley (approximately 2.5 miles from the southern edge of the Project site) (see also **Figures 3.3-4** and **3.3-5** for KOP location). There are existing cultural modifications such as utility lines, roads, and residences.

KOP 5

This image (**Figure 3.3-22**) was taken from the Quail Spring recreation area, approximately 2.5 miles from the western perimeter of the Project site (see also **Figures 3.3-4** and **3.3-5** for KOP location). This view represents one of the recreational views to the Project with the greatest potential for impacts. Cultural modifications within the viewshed are primarily residential development and limited commercial development in both unincorporated San Bernardino County and the Town of Apple Valley. The number of viewers is low because KOP 5 is a remote recreation area.

KOP 6

This image was taken from behind the Apple Valley Town Hall (**Figure 3.3-23**; see also **Figures 3.3-4** and **3.3-5** for KOP location) approximately 9 miles from the Project site. This image was chosen as a representative KOP for the Town of Apple Valley because it was taken from a location at the heart of the Town of Apple Valley, which has largely unobstructed/direct views to the Project site. This represents the general view of the Project site from Apple Valley. Due to the distance from the Project site, the view from Apple Valley includes a large number of the turbines.

KOP 7

This image was taken from the corner of SR-18 and SR-247, approximately 6 miles from the southeastern perimeter of the Project site (**Figure 3.3-24**; see also **Figures 3.3-4** and **3.3-5** for KOP location). This image was chosen as a representative KOP for Lucerne Valley, especially for roadway travelers, because this location is in the center of Lucerne Valley at the junction of two County-designated scenic highways. Additionally, the view could serve as representative of the general view of residents living in Lucerne Valley. Because of the orientation of the Project site compared to this area, Project features would be minimized.

KOP 8

This image was taken from the corner of Camp Rock Road in Lucerne Valley, approximately 7 miles from the southeastern perimeter of the Project site (**Figure 3.3-25**; see also **Figures 3.3-4** and **3.3-5** for KOP location). This image was chosen as a representative KOP for Lucerne Valley because this location is within a residential area of Lucerne Valley and has views to a large number of turbines.

Other Areas

Many other sensitive viewing areas were identified within the VSOI and are depicted on **Figure 3.3-6**. Sensitive receptor locations included on this figure are: San Bernardino National Forest, California historic landmarks, residential areas, parks, open space, and trails. Each was eliminated from KOP consideration due to either having obstructed views of the Project or one of the chosen KOPs could serve as a representative view with higher potential for impacts from the Project.

3.3.4 Environmental Consequences and Mitigation

Alternative 1: Proposed Project

The following analysis describes direct and indirect impacts related to the Project as the potential impacts relate to scenic quality, sensitive viewing areas and each KOP, lighting, glint/glare, motion and shading, and landscaping.

Table 3.3-A, provided below lists the color and materials of some of the more prominent Project features (due to height/size).

Table 3.3-A: Major Component Color and Materials

COMPONENT	COLOR
Wind Turbine	Matted white on metal
Meteorological Towers	Non-reflective metal
O & M Building	Natural shades of beige and brown on concrete
Transmission Towers and Line	Wooden, H-frame poles
Substation	Structural steel
Access Road	Gravel or dirt

Visual Impact Significance on Scenic Quality

Given the height and number of turbines proposed as Project improvements, and the location of the Project (on top of a topographic high point), it would be highly visible from adjacent locations in the area and potentially adverse impacts on scenic attractiveness would be expected. However, due to the degree of existing modification and landscape

degradation in the Project vicinity (including existing roadways/highways, large transmission corridors and existing development), potential adverse impacts to the area's scenic quality are reduced. In addition, based on visual surveys conducted and as shown in the selected character photos, landscapes inventoried within the VSOI have primarily moderate or low levels of existing scenic integrity. Ground-disturbing activities at the Project site are smaller when compared to other forms of industrial development; long term disturbance of the Project is anticipated to be approximately 31%.

No rock outcroppings were identified in the potentially-disturbed area of the Project development. Some were identified within the VSOI, but none were within views from a state-designated scenic highway. Therefore, no potential adverse visual impacts as a result of damage to rock outcroppings would be expected.

Although open space on the ridge would be maintained as much as practicable, the Proposed Project would change the site's existing character. However, open space would be maintained between wind turbines and some existing uses could continue after project construction. As is shown on **Figure 3.3-4**, the topographic relief of the area surrounding the Project obstructs many locations that would otherwise have views. The Project would clearly change the appearance of a visually predominant ridgeline in the established VSOI. However, some viewers may view this change as visually stimulating or appreciate the visual evidence of a move toward renewable energy. Others may view the change as detracting from the natural desert environment. Because viewer reaction cannot be anticipated and may be variable, potential adverse visual impacts to the scenic quality of the VSOI identified for the Project are anticipated.

It should be noted that the Granite Mountain Wind Energy Project may draw positive visual interest to the area. For example, the wind facility of approximately 4,000 wind turbine generators/windmills in the San Gorgonio Pass area (which includes portions of Palm Springs, Desert Hot Springs, and Coachella Valley) have become somewhat of a tourist attraction, where companies now even offer tours in the area. The turbines have become part of the visual character of the area. However, prior to development, the proposed WTG facilities were seen as a potentially unmitigable adverse visual impact for travelers through the area. This Project would not look like nor would it be the same size or magnitude as the WTG facilities in the San Gorgonio Pass area; however, it is anticipated that some of the same visitor interest could occur.

The Proposed Project would connect to the existing SCE transmission line located approximately 3.2 miles east of the Project site. The proposed northern transmission line route would largely travel along the top of the adjacent ridgeline, running almost due east until it intersects the existing line (**Figure 3.3-2**).

As discussed above, three high-voltage transmission systems transverse the area southeast of the Project site (**Figure 3.3-10**). Given the number of existing transmission systems within the vicinity of the Proposed Project, in combination with the variety of cultural modifications along the transmission line routes and within the VSOI, potential adverse impacts on scenic attractiveness are not anticipated.

Additionally, a substation would be built as part of the Project's interconnection to the SCE transmission system. The approximate location of the substation is shown on **Figure 3.3-2** and is expected to be located adjacent to SR-247. Because the highway has been designated as a scenic highway by the County and is eligible as a scenic highway by the

state, the construction of a substation adjacent to the highway is anticipated to result in potential adverse visual impacts. The substation, being more immediate than the turbines, would dominate foreground views from the highway.

It should also be noted that views to the Project are from an inferior level; only the top half (at most) of the wind turbine(s) are showing in any given view. It appears that only portions of turbines are seen, and, in some cases, the turbines are subordinate. As such, views to the Project are largely obstructed, as the topography of the ridgeline shields approximately half of the turbine heights.

Visual Impact Significance on Sensitive Viewing Areas

The final evaluation conducted in the impact assessment was the assignment of potential impact levels on representative sensitive viewing areas by combining viewer susceptibility and impact severity levels at key and characteristic viewing locations with contrast ratings. **Figures 3.3-18** through **3.3-22** (at the end of this section) depict existing and simulated views from each of the eight selected KOPs and aid in verifying Project-related impacts and assessing visual impact significance. The visual simulations developed for the Project have been designed to be viewed 10 inches from the viewer's eye. This distance would portray the most realistic life-size image from the location of the sensitive viewing area. Two different visual surveys were completed to collect the photographic and geographic information system (GIS) data necessary to create the simulations. The first site visit was during March 2009, and the second occurred during February 2010. As such, the climactic setting varied from bright blue sky to cloudy conditions. The simulations presented in this report represent both climate types and are meant to give the reader a view of the Project features' stark contrast against a blue sky in addition to a less obvious contrast against a grey sky. A description of potential adverse impacts to the eight KOPs is provided below.

KOP 1

While the scenery may obstruct some views of the Project, the most visually dominant components of the Project (428-foot-tall wind turbines) would be clearly visible from this location. In addition, nighttime Project lighting added to the area would be visible from this KOP location. The Project, in the absence of screening, would be highly visible due to the flat, open viewing conditions to the Project and the elevated position of the Project in relation to the recreation area.

The Proposed Project design does not meet VRM objectives from KOP 1. A comparison of the contrast ratings from KOP 1 with the objectives for the interim VRM Class III designation indicated a strong level of contrast that is not consistent with the management prescriptions for a Class III visual resource area. The objective of a Class III visual management area is to partially retain the existing character of the landscape. Changes to the landscape character may begin to attract attention, but should not dominate the visual setting. Management activities may be seen, but should not attract the attention of the casual observer. The strong lines created by the wind turbines on top of the ridgeline produce a contrast that would be apparent to viewers. The bold form of the proposed structure creates a contrast to other structures. Due to the high contrast in form, line, color, and texture, the Proposed Project is not consistent with Class III objectives.

KOP 2

This KOP would have direct, partially obstructed views to the Project. In addition, nighttime Project lighting – required FAA lights on the turbines – would be visible from this KOP location. The Project, in the absence of screening, would be highly visible due to the flat, open viewing conditions and high elevation of the Project site.

The Proposed Project design meets VRM objectives from KOP 2. A comparison of the contrast ratings from KOP 2 with the objectives for the interim VRM Class IV indicated a strong level of contrast that is acceptable within the management prescription for a Class IV visual resource area. The objective of a Class IV visual management area is to allow for activities that modify the existing character of the landscape. Changes to the landscape character may attract attention and dominate the visual setting. Management activities may be seen and may also attract the attention of the casual observer. The strong line created by the wind turbines on top of the ridgeline and the bold form of the proposed structure create a contrast to other structures located in the vicinity of the Project site. Although there is high contrast in form, line, color, and texture, the Proposed Project is consistent with Class IV objectives. A Class IV landscape is the location where development such as this Proposed Project would ideally be located.

Although the Project development is consistent with the VRM objectives, the sensitivity of residents must also be considered. Because the viewshed would change dramatically from an undeveloped ridgeline to a developed WTG facility, many may see this change as unwelcome. Although management of Class IV allows for strong contrast levels, impact susceptibility and severity for the KOP are high and moderate/high, respectively.

KOP 3

This KOP would have direct, partially obstructed views to the Project at the eastern site boundary. Nighttime Project lighting added to the area would be visible from this KOP location. The Project, in the absence of screening, would be highly visible due to the elevated nature of the Project site and height of Project features.

The Proposed Project design does not meet VRM objectives from KOP 3. A comparison of the contrast ratings from KOP 3 with the objectives for the interim VRM Class III designation indicated a strong level of contrast that is not consistent with the management prescriptions for a Class III visual resource area. The strong lines created by the wind turbines on top of the ridgeline produce a contrast that would be apparent to viewers. The bold form of the proposed structure creates a contrast to other structures. Due to the high contrast in form, line, color, and texture, the Proposed Project is not consistent with Class III objectives.

The average daily traffic count for this portion of SR-247 is relatively low (approximately 2,200 vehicles). Further, topography in the area obstructs many views to the Project, creating only periods of visibility during travel along this route. In addition, existing cultural modifications exist not only in the view of the Project site from this KOP, but also along SR-247. Therefore, from this location, aesthetic impact significance is potentially adverse for SR-247 travelers.

This KOP, however, is also representative of residential viewers on either side of the highway. Because these viewers have much higher sensitivity to contrast, it is anticipated that views from these residences would potentially be adversely impacted by project development.

KOP 4

This KOP would have direct views to the Project; however, some are obstructed by existing transmission lines. This KOP would also have the closest views of the proposed transmission line. In addition, nighttime Project lighting added to the area would be visible from this KOP location. The Project, in the absence of screening, would be highly visible due to the flat, open viewing conditions and high elevation of the Project site.

The Proposed Project design meets VRM objectives from KOP 4. A comparison of the contrast ratings from KOP 4 with the objectives for the interim VRM Class IV indicated a strong level of contrast that is acceptable within the management prescription of a Class IV visual resource area. The strong line created by the wind turbines on top of the ridgeline and the bold form of the proposed structure create a contrast to other structures. Although there is high contrast in form, line, color, and texture, the Proposed Project is consistent with Class IV objectives.

Although the project development is consistent with the VRM objectives, the sensitivity of residents must be considered. Because the viewshed would change from an undeveloped ridgeline to a developed WTG facility, many may see this change as unwelcome. Although Class IV allows for strong contrast levels, impact susceptibility and severity from the KOP are both moderate/high.

KOP 5

While the scenery may obstruct some views of the Project, the most visually dominant components of the Project (428-foot-tall wind turbines) would be clearly visible from this location. In addition, nighttime Project lighting added to the area would be visible from this KOP location. The Project would be highly visible from this KOP due to the flat, open viewing conditions to the Project and the elevated position of the Project in relation to the recreational users; however, because of the nature of this recreation area, screening is frequent through either rock features or topographic variations.

The Proposed Project design does not meet VRM objectives from KOP 5. A comparison of the contrast ratings from KOP 5 with the objectives for the interim VRM Class III designation indicated a high level of contrast that is not consistent with the management prescriptions for a Class III visual management area. The strong lines created by the wind turbines on top of the ridgeline produce a contrast that would be apparent to viewers. The strong contrast in structure, line, and texture produced by the wind turbines would not be compatible with Class III objectives.

KOP 6

This KOP location represents distant (approximately 9 miles from the Project site) views from the Town of Apple Valley. The KOP is located behind Apple Valley Town Hall, within the center of commercial development for the town. Additionally, the view may be representative of travelers along SR-18 and nearby residents.

Viewing durations may be somewhat limited, as topographic relief and cultural modifications (commercial and residential buildings, utility lines) could block views of the site within the vicinity of this viewing location. Project features will be visible to the viewers adjacent to this KOP location; however, existing cultural modifications and vegetation lie between this KOP and the Project site, obstructing some of the views to the Project and degrading the existing scenic quality of the view.

The Project, in the absence of screening, would be visible to views from the Town of Apple Valley, including residents, recreational users, and roadway travelers. The Project would change the site's existing character, and reaction to this change cannot be anticipated. While people some value the visual stimulation of wind turbines and the cultural shift toward renewable energy, others may view the change as detracting from the desert environment. Because the majority of viewers at this KOP are residents of the Town of Apple Valley, the contrast to the existing setting by the Project features is anticipated to result in potential adverse impact without mitigation. As identified for KOPs 1 and 2, nighttime Project lighting would be minimized; however, lighting would need to comply with FAA regulations. Project lighting may not be more noticeable in comparison to existing lighting adjacent to the Project site. Because this KOP is located in a more urbanized area of Apple Valley and light intrusion is already present, the addition of the Project light source is not anticipated to result in potential adverse impacts.

The Project design did meet VRM objectives in KOP 6. The strong line created by the wind turbines on top of the ridgeline, as well as the bold form of the proposed structure creates a contrast to other structures. Although there is high contrast in form, line, color, and texture, the proposed Project is consistent with Class IV objectives. A Class IV landscape is the location where development such as this Project would ideally be located. Although the Project development is consistent with the VRM objectives, the sensitivity of residents must be accounted for. Because the viewshed would change from an undeveloped ridgeline to a developed wind farm, many may see this change as unwelcome. Although Class IV allows for strong contrast levels, impact susceptibility and severity for the KOP are both moderate/high. Therefore, aesthetic impact significance from this location is classified as potentially adverse without mitigation. Further, although mitigation measures are discussed in Section 3.3.5, due to the size of Project features, it is not anticipated that implementation of mitigation measures could reduce potentially adverse impacts to this KOP.

KOP 7

This KOP location represents distant (approximately 6 miles from the Project site) views from Lucerne Valley and the junction of two County-designated scenic highways. The KOP is located at the junction of SR-18 and SR-247, symbolizing the center of Lucerne Valley and, as such, this view represents traveler views along scenic highways. Additionally, the view may be representative for potential Lucerne Valley residents.

Project features will be visible to the viewers adjacent to this KOP location; however, existing cultural modifications and vegetation lie between this KOP and the Project site, obstructing some of the views to the Project and degrading the existing scenic quality of the view.

The Project, in the absence of screening, would be visible to views from Lucerne Valley, including residents, recreational users, and roadway travelers. The Project would change the site's existing character, and reaction to this change cannot be anticipated. While some people value the visual stimulation of wind turbines and the cultural shift toward renewable energy, others may view the change as detracting from the desert environment. Because the majority of viewers at this KOP are residents of Lucerne Valley, the contrast to the existing setting by the Project features is anticipated to result in potential adverse impacts without mitigation. As identified for KOPs 1 and 2, nighttime Project lighting would be minimized. Lighting would need to comply with FAA regulations. However, Project lighting may not be more noticeable in comparison to existing lighting adjacent to the Project site.

Because this KOP is located in a more urbanized area of Lucerne Valley and light intrusion is already present, the addition of the Project light source is not anticipated to result in potential adverse impacts.

The Project design did meet VRM objectives in KOP 7. The strong line created by the wind turbines on top of the ridgeline and the bold form of the proposed structure create a contrast to other structures. Although there is high contrast in form, line, color, and texture, the proposed Project is consistent with Class IV objectives. A Class IV landscape is the location where development such as this Project would ideally be located. Although the Project development is consistent with the VRM objectives, the sensitivity of residents must be accounted for. Because the viewshed would change from an undeveloped ridgeline to a developed WTG facility, many may see this change as unwelcome. Although Class IV allows for strong contrast levels, impact susceptibility and severity for the KOP are both moderate/high. Therefore, aesthetic impact significance from this location is classified as potentially adverse without mitigation. Further, although mitigation measures are discussed in Section 3.3.5, due to the size of Project features, it is not anticipated that implementation of mitigation measures could reduce potentially adverse impacts to this KOP.

KOP 8

This KOP location represents distant (approximately 7 miles from the Project site) views from Lucerne Valley residential areas. The KOP is located on the corner of Camp Rock Road and Wilshire Road. Camp Rock Road is one of the larger roads within northeastern Lucerne Valley and, as such, this view represents Lucerne Valley's residential, distance views of the Project.

Project features will be visible to the viewers adjacent to this KOP location; however, existing cultural modifications and vegetation lie between this KOP and the Project site, obstructing some of the views to the Project and degrading the view's existing scenic quality.

The Project, in the absence of screening, would be visible to views from Lucerne Valley, including residents, recreational users, and roadway travelers. The Project would change the site's existing character, and reaction to this change cannot be anticipated. While some people value the visual stimulation of wind turbines and the cultural shift toward renewable energy, others may view the change as detracting from the desert environment. Because the majority of viewers at this KOP are residents of Lucerne Valley, the contrast to the existing setting by the Project features is anticipated to result in potential adverse impacts without mitigation. As identified for KOPs 1 and 2, nighttime Project lighting would be minimized; however, lighting would need to comply with FAA regulations. Project lighting will be more noticeable in comparison to existing lighting adjacent to the Project site.

The Project design did meet VRM objectives in KOP 8. The strong line created by the wind turbines on top of the ridgeline and the bold form of the proposed structure create a contrast to other structures. Although there is high contrast in form, line, color, and texture, the proposed Project is consistent with Class IV objectives. A Class IV landscape is the location where development such as this Project would ideally be located. Although the Project development is consistent with the VRM objectives, the sensitivity of residents must be accounted for. Because the viewshed would change from an undeveloped ridgeline to a developed WTG facility, many may see this change as unwelcome. Although Class IV allows for strong contrast levels, impact susceptibility and severity for the KOP are both moderate/high. Therefore, aesthetic impact significance from this location is classified as

potentially adverse without mitigation. Further, although mitigation measures are discussed in Section 6 of the VIA report, due to the size of Project features, it is not anticipated that implementation of mitigation measures could reduce potentially adverse impacts to this KOP.

Table 3.3-B, presented below, summarizes the factors used to consider impact significance: contrast rating, conformance to VRM objectives, impact susceptibility, and impact severity.

Not all viewers would feel affected by changes in views resulting from the Proposed Project. Some may appreciate the visual stimulation of the turbines and would welcome this visual evidence of the shift toward renewable energy during these times of climate change and movements to domestic energy solutions. However, this analysis does not draw conclusions based on viewers' emotional reactions. Because of the strong contrast degrees, relatively high susceptibility and severity, and the change in visual character, potential adverse impacts are anticipated.

Mitigation measures listed in Section 3.3.5 are not anticipated to hide or soften the visual impact of the Proposed Project to reduce potential adverse impacts.

Table 3.3-B: Visual Impact Significance – Sensitive Viewing Areas

Viewing Area	Contrast Rating	Meet VRM Objectives?	Visual Impact Susceptibility	Visual Impact Severity
Sensitive Viewing Area and KOP No. 1 (Figure 3.3-18; see also Figures 3.3-4 and 3.3-5 for KOP location) – Recreationist view from Whitehorse Mountain.	Strong	No	Moderate/High	Moderate/High
Sensitive Viewing Area and KOP No. 2 (Figure 3.3-19; see also Figures 3.3-4 and 3.3-5 for KOP location) – Residential view from unincorporated residences within the sphere of influence of Apple Valley.	Strong	Yes	High	Moderate/High
Sensitive Viewing Area and KOP No. 3 (Figure 3.3-20; see also Figures 3.3-4 and 3.3-5 for KOP location) – Traveler view from southbound SR-247 at the closest location with views of the Project.	Strong	No	Low/ Moderate	Moderate
Sensitive Viewing Area and KOP No. 4 (Figure 3.3-21; see also Figures 3.3-4 and 3.3-5 for KOP location) – Closest partially obstructed residential view of the Project within Lucerne Valley.	Strong	Yes	Moderate/High	Moderate/High
KOP No. 5 (Figure 3.3-22; see also Figures 3.3-4 and 3.3-5 for KOP location) – Views of the Project from Quail Spring Recreation Area; the closest water feature with views of the Project.	Strong	No	Moderate	Moderate/High
KOP No. 6 (Figure 3.3-23; see also Figures 3.3-4 and 3.3-5 for KOP location) – Views of the Project from Apple Valley Town Hall; SR-18, recreation fields, and residences are nearby.	Strong	Yes	Moderate/High	Moderate
KOP No. 7 (Figure 3.3-24; see also Figures 3.3-4 and 3.3-5 for KOP location) – Views of the Project from SR-18 and SR-247, two County-designated scenic highways.	Strong	Yes	Moderate/High	Moderate

VIEWING AREA	CONTRAST RATING	MEET VRM OBJECTIVES?	VISUAL IMPACT SUSCEPTIBILITY	VISUAL IMPACT SEVERITY
KOP No. 8 (Figure 3.3-25; see also Figures 3.3-4 and 3.3-5 for KOP location) – Views of the Project from Camp Rock Road in Lucerne Valley – within a residential area.	Strong	Yes	Moderate/High	Moderate

Lighting

Currently, there is virtually no lighting on the proposed site and only limited lighting in the immediate area. Lighting elements are highly visible against the night skies. Several items relating to lighting and turbines are considered here, including lighting element characteristics, lighting elements viewed at night, glare elements, and atmospheric conditions relating to light/glare. Each is addressed below.

FAA Lighting

As previously discussed, FAA Advisory Circular 70/7460-1K requires that all airspace obstructions over 200 feet in height or in close proximity to an airfield have obstruction lighting. The tallest structure proposed on site is 428 feet high, and the tallest transmission pole would be approximately 115 feet high. Since some Proposed Project structures are not below the 200-foot limit, on-site turbines would require obstruction lighting. However, not all turbines would require FAA lights. As shown in **Figure 3.3-2**, 13 of the 28 turbines would require FAA lights.

The human eye can focus and “zoom in” on distant objects, especially lights at night (Energy-wise Renewables, 1995). Nighttime lighting factors include: distance to lighting elements (varies between types of lighting elements installed) heights and locations of lighting elements, color of lighting elements, and speed of blinking of lights. FAA requirements can include strobe lighting, red flashing, or steady red lights. In this case, 13 of the wind turbines would require low-frequency red strobe lights with a long dark interval and short flash-on time, in coordination with the FAA, because the structures are above 200 feet in height. Due to the introduction and quantity of the new light source, FAA lighting is expected to result in potentially adverse nighttime visual impacts.

Other Lighting

Project lighting, other than FAA requirements, would be exterior security lighting on the O&M building and substation, which would be approximately 10 feet high. Currently, night lighting produced within the immediate project vicinity consists mainly of residential and commercial lighting. Additionally, vehicle headlights for access road travelers would create temporary light additions to the area.

Lighting design for the Proposed Project would be consistent with the County’s ordinance and FAA requirements. Lighting would be required for safe and efficient operation/maintenance activities within the Proposed Project site. To avoid intrusion on sensitive areas, outdoor lighting would be directed downward and toward the interior of the Project site. The Proposed Project would add to existing lighting in the area and could significantly increase the existing night lighting in the Project area or create significant night lighting impacts from the introduction of a new light source or backscatter light, which a nearby viewer may experience when looking toward the site. The distances in which lighting would be viewed would vary depending on atmospheric conditions and existing light

sources. However, a viewshed model (using 30-meter-grid cell resolution, generated from 1:24,000 DEM data from the U.S. Geological Survey [USGS]) was run assuming that the light source would be approximately 10 meters tall along the site compound, O&M building, and substation. The results indicate that project lighting would not be visible to the west (the nearest residences) and north of the Proposed Project due to topographic obstructions in the higher mountain ridges between the light source and the receivers to the west. Further, given the distance from the site to potential receptors to the east and south and the size of the lights, it is unlikely that these lights would be visible, or if they were, they are anticipated to be indistinct. Therefore, Project lighting, other than lighting required by FAA, is not anticipated to result in potentially adverse impacts.

Lighting used during construction, installation, and maintenance of turbines within the study area is considered to be temporary; therefore, the associated impacts would also be temporary.

Glint/Glare

Particular attention was paid to glare given off by the Proposed Project, as direct sunlight in the region is common. The towers and blades would be painted with non-reflective, unobtrusive colors to help lessen the effect of glare. Blade glint – the regular reflection of sun off rotating turbine blades – can be a temporary nuisance. Its occurrence depends on a combination of circumstances arising from the orientation of the nacelle, angle of the blade, and the angle of the sun. The reflectiveness of the blade surface is also important, and this is to some extent influenced by color and age of the blade. Matte surface finishes can be specified to minimize effects. Blade glint is an aspect that can be a potential distraction to drivers if roads are aligned toward the turbines. The effect can be noticed over considerable distances – as much as 10 to 15 kilometers (6 to 9.5 miles).

Atmospheric conditions can also have a distinct effect on the aesthetic impacts of the Proposed Project. Changing light can diminish or enhance the turbines' appearance from any given area. Low sun behind the viewer generally increases the contrast of sites against the desert background, while shimmering midday sun on a still day washes out the details of the middle- and long-range views. Looking into a setting sun, or on a windy day, the visual dominance would be subordinate, but with the sun at the viewer's back, or on a clear winter day, the machines become conspicuous. Air quality (smog) would, on numerous days throughout the year, partially or substantially lessen the visual appearance.

There is little in the public record regarding disturbance due to glare from turbines. As discussed above, glare would depend on the location of the sun, location of the observer, material reflective properties, and air quality. Because of the distance from the turbine to the residences, it is anticipated that residences would not be impacted by glint or glare from the turbines.

Motion and Shading

As previously discussed, the Visual Management System, developed by the U.S. Department of Agriculture (USDA) Forest Service (USDA, 1974) defines motion as a variable factor that can affect visual impact. It also states, "Motion often can be the most powerful creator of visual dominance. The human eye can detect total viewer area where little else is noticed. In a way, it is a form of contrast. The natural landscape tends to be motionless for the most part, but flowing water, flames, running animals, low moving fog,

and clouds or lightening are fascinating natural occurrences that attract and hold observers' attention—to the point of enhancement at times."

Project development would introduce motion into the study area. Moving blades (approximately 334 feet in diameter) would be seen from all identified KOPs (as depicted in **Figures 3.3-18 through 3.3-25**) and most character photos directed at the Proposed Project site, often leading eyes away from natural views. The effect of blade motion is a powerful visual element, and the spinning blades could attract and hold the observer's attention. In addition, while towers of the turbines are completely visible, the eye and mind ignore them, visually attracted to the moving white blades. However, unlike some of the older technology, like that which is employed at the San Gorgonio WTG facilities, the technology employed for the Project would have 15 to 18 rotations per minute (rpm), compared to older models which had speeds of 46 to 50 rpm. These slower rotation rates would reduce the visual attraction to the moving blades compared to the San Gorgonio site.

Rotating turbines next to each other can also draw the viewer's attention. Viewer distance also affects a viewer's response to the motion, as well as atmospheric conditions and time of day. Viewers close to the site are drawn to the motion, whereas views of the turbines in middleground and background views are often blurred into the setting, with the motion going relatively unnoticed.

Shadow flicker is a change in light intensity when a wind turbine blade's shadow appears and disappears as it rotates in front of the sun. This can happen in the morning or evening, when the sun is low in the sky and where the turbine is between the observer and the sun. Flicker is normally considered a nuisance above the 2.5 hertz, but shadow flicker from modern turbines is below one hertz.

The main factor affecting shadow flicker is the distance from the observer to the turbine. The human eye has a non-linear response to light levels, and the light level changes greatly with distance. Shadows are more distinct and intense at smaller distances and are more dispersed and less intense at larger distances. This is because a larger percentage of the sun is blocked out when an observer is nearer to the object casting a shadow. Shadow flicker is reduced in cloudy conditions since shadows become faint. The angle of the blades relative to the observer also affects the degree of impact: if the plane of the blades is in a line between the observer and the sun, then the shadow would be very skinny and would have less of an impact than if it were perpendicular.

At distances greater than 10 rotor diameters, a turbine blade is not perceived to be passing through the sunlight and creating flicker. Rather, it is seen as an object with the sun behind it. Since the Proposed Project is far from the nearest houses, at least 5,000 feet from the nearest residence, or approximately 15 rotor diameters, shadow flicker is not anticipated to impact residences.

Landscaping

Landscaping is not incorporated into the Proposed Project.

TEMPORARY CONSTRUCTION-RELATED IMPACTS

The construction laydown area would be contained within the 91.2 to 109.3 acre Proposed Project site and would include materials storage, construction parking, and the O&M building. Construction access would utilize the selected access route (**Figure 3.3-2**) leading into the site from SR-247.

Project site preparation includes overall site grading and blasting. Grading and blasting activities would consist of the removal, storage, and/or disposal of earth, sand, gravel, vegetation, organic matter, loose rock, and debris to the lines and grades necessary for construction.

Due to worker health and safety considerations associated with high daytime temperatures, early work hours (prior to daybreak) may be adopted. It is not anticipated that construction activities would occur during nighttime hours. However, limitations on wind velocity during turbine erection and more restrictive wind velocity limitations on “flying the blades” together with deadlines and cost of high lift cranes can make nighttime construction a necessity during a portion of the construction cycle.

During the Project construction period, construction activities, materials, equipment, trucks, temporary structures, and vehicles would be visible to surrounding areas due to the flat, open viewing conditions surrounding the Project site. As the Project site is undeveloped, such construction activities at the site would contrast significantly with the area’s existing natural character. During construction of the transmission line and access road, construction materials, equipment, and vehicles would be visible to adjacent areas. There may be construction lighting and glint/glare from the equipment during construction at the wind turbine site, the transmission line, and the access road. Construction activities would be conducted in a manner that minimizes (visible) dust emissions.

While visual changes associated with construction activities at the Proposed Project site and along the approved transmission line route would introduce new activities and structures, construction activities would be conducted within a 10-month period; therefore, visual impacts are considered temporary and not potentially adverse.

Alternative Access Route 1A

As shown on **Figure 3-1**, Route 1A would be constructed to break off of Spinel Street and wind through the opening in topography until reaching the approximate center of the Project site. Because of the low visibility and contrast of the road against the existing conditions, especially when compared to other Project features, no additional adverse impacts are expected from the construction of Route 1A.

Alternative Access Route 1B

As shown on **Figure 3-1**, Route 1B would be constructed to break off of Johnson Road after it encircles the north end of the Project site and enter the site on the western side. Because of the low visibility and contrast of the road against the existing conditions, especially when compared to other Project features, no additional adverse impacts are expected from the construction of Route 1B.

Alternative Jasper Substation 1A – Public Land

The substation located on public land administered by the BLM, as shown on **Figure 3-1**, is located approximately one mile from SR-247. Sensitive viewers along SR-247 and nearby residences would have middle-ground views of the substation. It is anticipated that, because of the distance, views of the substation would be limited by existing transmission lines and Project features. It is expected that while constructing the substation on public land could potentially impact views, impacts are not potentially adverse due to lower contrast, viewer exposure, and existing scenic quality.

Alternative Jasper Substation 1B – Private Land

One alternative substation location would be built on private land. The approximate location of the substation is shown on **Figure 3-1** and is expected to be located adjacent to SR-247. Because the highway has been designated as a scenic highway by the County and is designated as an eligible scenic highway by the state, the construction of a substation adjacent to the highway is anticipated to result in potentially adverse visual impacts. The substation, being more immediate than the turbines, would dominate foreground views from the highway. Depending on the location selected for the substation, views of the substation may be obfuscated by existing and Project transmission lines.

Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development, ROW Application Denied, and CUP Not Approved

Under this alternative, BLM would amend the CDCA Plan to determine that the site is suitable for wind energy development, but would deny the ROW application for the Proposed Project, and the County would not approve the CUP for the Proposed Project. The site would remain in its present condition consisting of vacant desert lands, and impacts to visual resources would not occur.

Alternative 3: Action on Amendment to CDCA Plan Determines Site Unsuitable for Wind Energy Development

If an amendment to the CDCA Plan was prepared that determines the site unsuitable for wind energy development, the Project would not be built and the viewshed would remain unchanged. However, during the amendment of the CDCA Plan, the interim VRM classification developed for the Proposed Project site would become the VRM Classification for the site. Should this alternative be selected, the Project site would be classified as Class III and Class IV, depending on the area of the Project (see **Figure 3.3-17**).

Alternative 4: No Action on Site Suitability and Proposed Project

Under the No Action Alternative, the Proposed Project would not be constructed or operated and the land would be maintained in its present state. Therefore, no change would occur in the viewshed and there would be no potentially adverse visual impacts.

3.3.5 Avoidance, Minimization, and/or Mitigation Measures

The Proposed Project design includes features to minimize visual effects. These include, but are not limited to, shielding light sources and using non-reflective materials for project components. The Proposed Project would also implement recommended BLM PEIS BMPs, which were adopted as part of the proposed Wind Energy Development Program to ensure minimal impact to aesthetic resources. In addition to the BLM BMPs, Project-specific mitigation measures evaluated for their ability to eliminate or reduce the potential substantial

adverse impacts related to aesthetics were developed for the Proposed Project. However, potentially adverse visual effects on adjacent sensitive recreational users and residential viewers may still occur despite the design features, BMPs, and mitigation measures.

BLM BEST MANAGEMENT PRACTICES

Construction BMPs

- The public shall be involved and informed about the visual site design elements of the proposed wind energy facilities. Possible approaches include conducting public forums for disseminating information, offering organized tours of operating wind developments, and using computer simulation and visualization techniques in public presentations.
- Turbine arrays and turbine design shall be integrated with the surrounding landscape. Design elements to be addressed include visual uniformity, use of tubular towers, proportion and color of turbines, nonreflective paints, and prohibition of commercial messages on turbines.
- Other site design elements shall be integrated with the surrounding landscape. Elements to address include minimizing the profile of the ancillary structures, burial of cables, prohibition of commercial symbols, and lighting. Regarding lighting, efforts shall be made to minimize the need for and amount of lighting on ancillary structures.

Operation BMPs

- Operators shall reduce visual impacts during construction by clearly delineating construction boundaries and minimizing areas of surface disturbance; preserving vegetation to the greatest extent possible; utilizing undulating surface disturbance edges; stripping, salvaging, and replacing topsoil; contoured grading; controlling erosion; using dust suppression techniques; and restoring exposed soils as closely as possible to their original contour and vegetation.
- Operators shall monitor and maintain visual mitigation measures for the approved project in accordance with a visual monitoring and compliance plan. The operator shall maintain revegetated surfaces until a self-sustaining stand of vegetation is reestablished and visually adapted to the undisturbed surrounding vegetation. No new disturbance shall be created during operations without completion of a VRM analysis and approval by the authorized officer.

PROJECT-SPECIFIC MITIGATION MEASURES

Construction Mitigation

MMVR1: The only Project fencing would surround the Project substation and the interconnect substation; that fencing would be non-reflective and opaque.

MMVR2: To the extent that lighting, other than FAA-required lighting, is employed, the Applicant would prepare a Lighting Mitigation Plan for review/approval by BLM and San Bernardino County to include the following:

- Design/install external lighting that incorporates commercially available fixture hoods/shielding, with light directed downward or toward the area to be illuminated;
- Light fixtures shall not cause obtrusive spill light beyond the Project boundary;

- All lighting shall be of minimum necessary brightness consistent with operational safety and security; and
- Direct lighting does not illuminate the nighttime sky.

MMVR3: Non-reflective or matted desert colors shall be used on steel/metal exterior surfaces and supporting pedestals, where possible.

MMVR4: Temporary screening of construction and/or staging areas shall be used

MMVR5: Off-site outreach by both the BLM and ROW holder shall be performed to inform the public of the benefits of wind energy. Examples of outreach include, but are not limited to, the following:

- Working with local realtor groups, chambers of commerce, developers, and the building industry;
- Create brochures, posters, and talking points about the long-term value and benefits of the Project for posting in public kiosks at malls, parks, rest stops, libraries, and community services; and
- Coordination with school districts and day-care providers to identify sources for wind energy teaching materials.

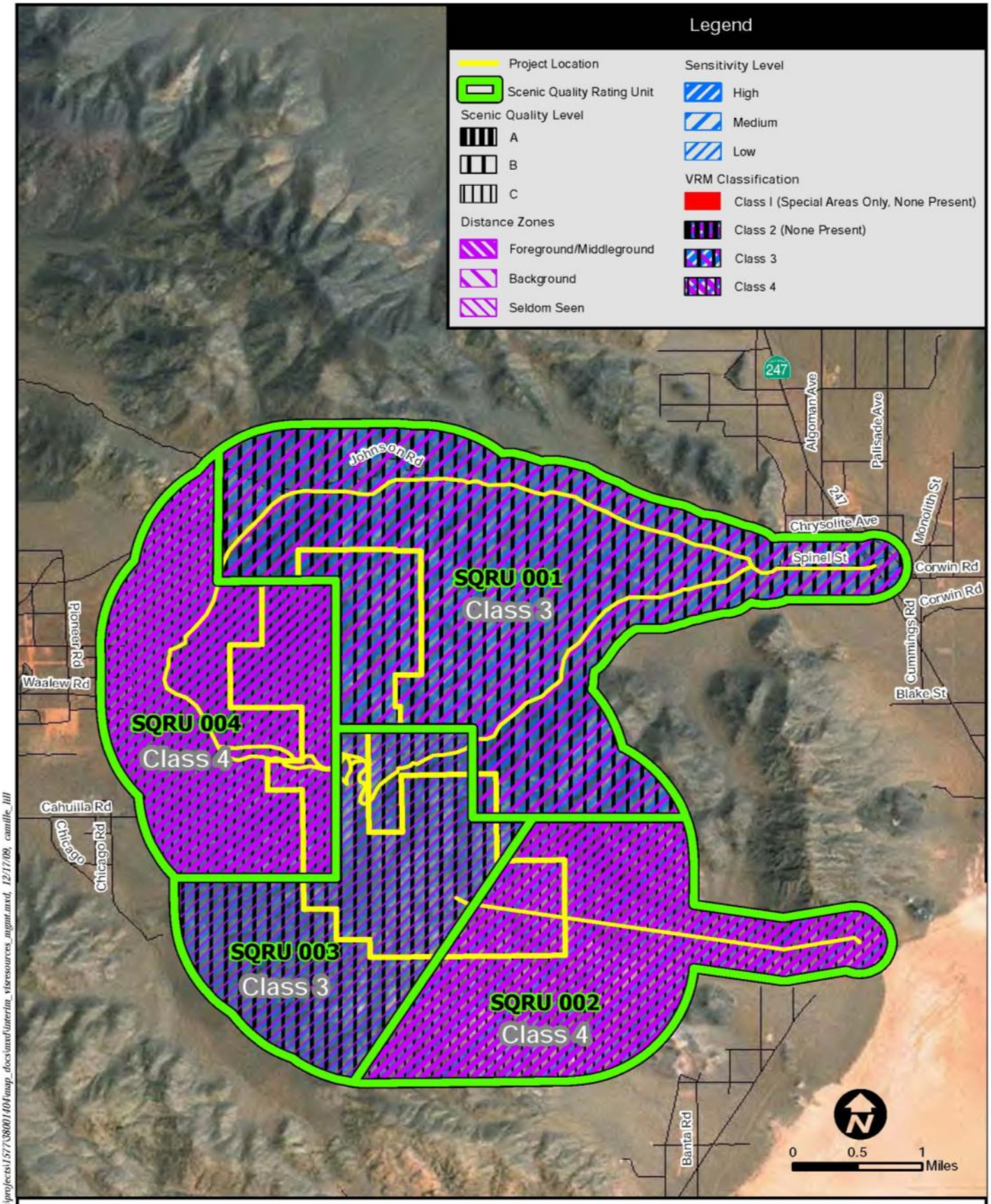
MMVR6: Disturbed surfaces shall be restored as closely as possible to their original contour and revegetated immediately after or contemporaneously with construction. Action shall be prompt to limit erosion and to accelerate restoring the preconstruction color and texture of the landscape. Natural material from the area will be used where feasible.

Operation Mitigation

MMVR7: The wind development site shall be maintained during operation. Inoperative or incomplete turbines shall be completely repaired, replaced, or removed. Towers shall be cleaned regularly to remove spilled or leaking fluids and the dirt and dust that would accumulate. Facilities and off-site ancillary features shall be kept clean of debris, trash, or waste.

3.3.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented

The Proposed Project is anticipated to impact visual resources within the Project area through the presence of Project features and introduction of night lighting into a relatively dark area, and because the presence of a WTG facility would fundamentally alter the area's landscape character. These impacts are expected to be adverse and not fully mitigable. It should be noted that the Proposed Project may draw positive visual interest to the area. However, impacts related to visual resources remain **potentially adverse after mitigation**.



Path: G:\gis\projects\157738001404\mxp_docs\mxd\interim_visresources_mgmt.mxd, 12/17/09, camille_lill

GRANITE MOUNTAIN WIND ENERGY PROJECT
INTERIM VISUAL RESOURCES MANAGEMENT CLASSES

Figure 3.3-17

Existing View from KOP 1

Proposed View from KOP 1

GRANITE MOUNTAIN WIND ENERGY PROJECT
EXISTING AND PROPOSED VIEW FROM KOP 1

Figure 3.3-18

Existing View from KOP 2

Proposed View from KOP 2

GRANITE MOUNTAIN WIND ENERGY PROJECT
EXISTING AND PROPOSED VIEW FROM KOP 2

Figure 3.3-19

Existing View from KOP 3

Proposed View from KOP 3

GRANITE MOUNTAIN WIND ENERGY PROJECT
EXISTING AND PROPOSED VIEW FROM KOP 3

Figure 3.3-20

Existing View from KOP 4

Proposed View from KOP 4

GRANITE MOUNTAIN WIND ENERGY PROJECT
EXISTING AND PROPOSED VIEW FROM KOP 4

Figure 3.3-21

Existing View from KOP 5

Proposed View from KOP 5

GRANITE MOUNTAIN WIND ENERGY PROJECT
EXISTING AND PROPOSED VIEW FROM KOP 5

Figure 3.3-22

Existing View from KOP 6

Proposed View from KOP 6

GRANITE MOUNTAIN WIND ENERGY PROJECT
EXISTING AND PROPOSED VIEW FROM KOP 6

Figure 3.3-23

Existing View from KOP 7

Proposed View from KOP 7

GRANITE MOUNTAIN WIND ENERGY PROJECT
EXISTING AND PROPOSED VIEW FROM KOP 7

Figure 3.3-24

Existing View from KOP 8

Proposed View from KOP 8

GRANITE MOUNTAIN WIND ENERGY PROJECT
EXISTING AND PROPOSED VIEW FROM KOP 8

Figure 3.3-25

This page intentionally left blank.

3.4 BIOLOGICAL RESOURCES

This section provides information on biological resources[7] within the Proposed Project area. A summary of federal, state, and local laws, policies, and regulations that influence biological resources is also presented in this section. Existing conditions and impacts on biological resources that may result from the Proposed Project are identified, and mitigation measures to avoid, minimize, and compensate for impacts on these resources are described below.

The Draft Biological Resources Report Granite Mountain Wind Energy Project, San Bernardino County, California (Tetra Tech [TtEC] 2009), provided in Appendix F to this DEIS/EIR, summarizes field surveys conducted within the Proposed Project area, which encompasses approximately 2,600 acres of land. The Proposed Project area includes access roads; staging areas; the proposed T-line electrical utility line; and the interconnection substation compound. Proposed Project features are described in detail in Chapter 2 of this DEIS/EIR. Additionally, special-status species[8] evaluations and surveys for special aquatic resource areas[9] were conducted. The focused surveys limits for special status species and special aquatic resource areas are specifically characterized in the attached biological reports (Appendix F) as the biological study area, based on species specific survey requirements and conversations with the BLM (Otahal 2009, LaPre 2009). These survey limits, results and analysis assumptions are detailed in the technical biological report contained in Appendix F.

3.4.1 Impact Criteria

The potential risk of direct and indirect impacts to biological resources from the construction and operation of the Proposed Project are assessed with respect to seven criteria. Potential impacts to biological resources could occur if reasonably foreseeable future actions were to result in any of the following:

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state conservation plan;
- Have a substantial adverse effect, either directly or indirectly, on any special status species;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS;

7 For the purposes of this document, "biological resources" include the plants, wildlife, and habitats that occur, or have the potential to occur, within the Project's BSA.

8 For the purposes of this analysis, "special-status species" include any species that has been afforded special recognition by federal, state, or local resources agencies (e.g., U.S. Fish and Wildlife Service [USFWS], California Department of Fish and Game [CDFG] Bureau of Land Management [BLM],' etc.) and/or resource conservation organizations (e.g., California Native Plant Society [CNPS]). The term "special-status species" excludes those avian species solely identified under Section 10 of the Migratory Bird Treaty Act (MBTA) for federal protection. Nonetheless, MBTA Section 10 protected species are afforded avoidance and minimization measures per state and federal requirements.

9 For the purposes of this analysis, special aquatic resource areas are defined as potential: United States Army Corps of Engineers (USACE) jurisdiction pursuant to Section 404 of the Clean Water Act (CWA); Regional Water Quality Control Board (RWQCB) legal authority in accordance with Section 401 of the CWA and as defined within Section 13050(e) (et seq.) of the California Water Code (CWC) via the Porter-Cologne Water Quality Control Act (Porter-Cologne); and California Department of Fish and Game (CDFG) jurisdiction pursuant to Section 1600 (et seq.) of the California Fish and Game Code (CFG Code).

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

3.4.2 Regulatory Setting

This section summarizes the applicable federal, state, and regional environmental regulations and plans that protect special-status species and special aquatic resource areas within the Proposed Project area.

Federal Regulation

National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 [42 United States Code (USC) 4321 et seq.] provides a process for maintaining, protecting, and enhancing the environment. The NEPA process requires federal agencies to disclose the environmental consequences of their decision-making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions.

Executive Orders (EO)

Actions To Expedite Energy-Related Projects—EO 13212, issued May 18, 2001, directs federal agencies to streamline the process for approving environmentally–responsible, domestic renewable energy applications.

Migratory Bird—EO 13186 (2001), issued on January 10, 2001, promotes the conservation of migratory birds and their habitats and directs federal agencies to implement the Migratory Bird Treaty Act.

Invasive Species—EO 13112 (1999), issued on February 3, 1999, promotes the prevention and introduction of invasive species and provides for their control and minimizes the economic, ecological, and human health impacts that invasive species cause through the creation of the Invasive Species Council and Invasive Species Management Plan.

Protection of Wetlands—EO 11990 (1977), issued on May 24, 1977, helps avoid the long-term and short-term adverse impacts associated with destroying or modifying wetlands, and avoiding direct or indirect support of new construction in wetlands when there is a practicable alternative.

Protection and Enhancement of Environmental Quality—EO 11514 (1970a), issued on March 5, 1970, supports the purpose and policies of the National Environmental Policy Act

(NEPA) and directs federal agencies to take measures to meet national environmental goals.

Federal Land Policy and Management Act

The Federal Land and Management Act of 1976, as amended (43 U.S.C. 1701-1782), designated a 25 million-acre area in southern California as the California Desert Conservation Area (CDCA), of which 10 million acres are managed by the BLM. The CDCA is managed under the principles outlined in the California Desert Conservation Area Plan of 1980 and is divided into four use categories that include controlled (Class C), limited (Class L), moderate (Class M), and intensive (Class I) land use. Four million acres of the CDCA are covered as Class C and are intended to be kept in a natural state by restricting access and limiting disturbance to only foot and horse traffic. Class L lands comprise another 4 million acres of the CDCA and aim to protect sensitive, natural, scenic, ecological, and cultural resources. Lower-intensity, carefully controlled multiple uses that do not significantly diminish the resources named above are allowed within this land use class. Approximately 1.5 million acres are designated as Class M and provide for mixed use that balances with ecosystem preservation. This class allows for human disturbance such as mining, livestock grazing, recreation, energy, and utility development to occur, but any potential effects must be mitigated. Finally, Class I lands comprise approximately 500,000 acres and allow for concentrated human disturbance. Mitigation for any human disturbance should be conducted within this land use class when possible.

The CDCA contains wilderness areas, and Areas of Critical Environmental Concern (ACECs). Each ACEC has its own management plan to ensure maintenance and protection of the unique resources within them. ACECs are management tools that identify, protect, and monitor significant natural and cultural resources within the area while also providing for other compatible uses. The Bendire's Thrasher ACEC is located within the northern portion of the BSA. The Ord-Rodman DWMA ACEC is approximately 3.5 miles northeast of the BSA.

West Mojave Plan

The West Mojave Plan (WMP) defines a strategy for conserving plant and animal species and their habitats and defines a process for complying with threatened and endangered species laws.

Federal Endangered Species Act

The Federal Endangered Species Act (FESA) (1973), as amended, protects plants and wildlife that are listed by the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) as endangered or threatened. Section 9 of FESA prohibits the taking of endangered wildlife, where take is defined as any effort to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct" (50 CFR 17.3). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any endangered plant on federal land, and removing, cutting, digging up, damaging, or destroying any endangered plant on non-federal land in knowing violation of state law (16 United States Code [USC] 1538). Under Section 7 of FESA, federal agencies are required to consult with the USFWS if their actions, including permit approvals or funding, could adversely affect an endangered species (including plants) or its critical habitat. Through consultation and the issuance of a biological opinion, the USFWS may

issue an incidental take statement allowing take of the species that is incidental to another legal activity, provided the action will not jeopardize the continued existence of the species. FESA specifies that the USFWS designate habitat for a species at the time of its listing in which are found the physical or biological features "essential to the conservation of the species," or which may require "special management consideration or protection..." (16 USC § 1533(a)(3).2; 16 USC § 1532(a)). This designated Critical Habitat is then afforded the same protection under the FESA as individuals of the species itself, requiring issuance of an Incidental Take Permit prior to any activity that results in "the destruction or adverse modification of habitat ... determined ... to be critical" (16 USC § 1536(a)(2)).

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (1918) implements international treaties between the United States and other nations created to protect migratory birds, any of their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. As authorized by the MBTA, the USFWS issues permits to qualified applicants for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, education, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal. The regulations governing migratory bird permits can be found in 50 CFR part 13, General Permit Procedures and 50 CFR part 21, Migratory Bird Permits. The State of California has incorporated the protection of birds of prey in Sections 3800, 3513, and 3503.5 of the California Fish and Game Code (CFGC).

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (The Eagle Act) (1940) was originally implemented for the protection of bald eagles. Congress amended the Eagle Act to cover golden eagles in the 1960s, a move that was, partially, an attempt to strengthen protection of bald eagles, since the latter were often killed by people mistaking them for golden eagles. This act made it illegal to import, export, take (molest or disturb), sell, purchase, or barter any bald eagle or golden eagle or part thereof. Recently in 2008, The Eagle Act regulations have been amended to provide two mechanisms to authorize take by certain persons who have been authorized under the Endangered Species Act (ESA) to take bald (Haliaeetus leucocephalus) and golden eagles(Aquila chrysaetos).

Eagle take that was prohibited under the ESA is, in many instances, also prohibited under the Eagle Act. Both statutes define "take" as killing, wounding, pursuing, shooting, capturing, and collecting the species they protect (16 U.S.C. 668c; 16 U.S.C. 1532(19)). Additionally, the ESA definition of ''take'' includes the terms ''harm'' and ''harass,'' while the Eagle Act definition includes ''molest or disturb.'' Although the regulatory definitions of ''harm,'' ''harass,'' and ''disturb'' differ, they overlap in several ways, with the result that an action considered likely to incidentally take eagles under the ESA may also take eagles under the Eagle Act.

First, the new rules establish regulatory provisions under 50 CFR 22.11 to provide take authorization under the Eagle Act to ESA section 10(a)(1)(B) permittees where the bald eagle is covered in a Habitat Conservation Plan (HCP) or the golden eagle is covered as a non-listed species, as long as the permittee is in full compliance with the terms and conditions of the ESA permit.

This provision also extends Eagle Act take authorization to ESA permits for Scientific Purposes and permits for Enhancement of Propagation or Survival (i.e., Recovery permits) issued under ESA section 10(a)(1)(A). Second, the new rule establishes a new permit category to provide expedited Eagle Act permits to entities authorized to take bald eagles through section 7 incidental take statements. Permits are not available under this new permit for golden eagles because as a non-listed species no take of golden eagles was previously authorized under the ESA's section 7.

Clean Water Act

The purpose of the Clean Water Act (CWA) (1977) is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Section 404 of the CWA prohibits the discharge of dredged or fill material into "waters of the United States" without a permit from the United States Army Corp of Engineers (USACE). The definition of waters of the United States includes rivers, streams, estuaries, the territorial seas, ponds, lakes, and wetlands. Wetlands are defined as those areas "that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 Code of Federal Regulations [CFR] 328.3 7b). The U.S. Environmental Protection Agency (EPA) also has authority over wetlands and may override a USACE permit. Substantial impacts to wetlands may require an individual permit. Proposed projects that only minimally affect wetlands may meet the conditions of one of the existing Nationwide Permits. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions; this certification or waiver is issued by the Regional Water Quality Control Board (RWQCB).

State Regulation

California Environmental Quality Act

The California Environmental Quality Act (CEQA) (California Public Resources Code section 21000 et seq.) of 1970 requires state and local agencies to identify and disclose the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible.

Although threatened and endangered species are protected by specific federal and state statutes, CEQA Guidelines Section 15380(d) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definition in the ESA and the section of the California Fish and Game Code dealing with rare or endangered plants and animals. CEQA Section 15380(d) allows a public agency to undertake a review to determine whether a significant effect on species that have not yet been listed by either USFWS or DFG (e.g., candidate species, species of special concern) would occur; therefore, CEQA provides an agency with the ability to protect a species from a project's potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

California Endangered Species Act

The CESA (1984) generally parallels the main provisions of the federal ESA, but, unlike its federal counterpart, CESA applies the take prohibitions to species proposed for listing

(called "candidates" by the State) and has a much narrower definition of "take." Section 2080 of the CFGC prohibits the taking, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or in the regulations. "Take" is defined in Section 86 of the CFGC as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects. State lead agencies are required to consult with CDFG to ensure that any action they undertake is not likely to jeopardize the continued existence of any endangered or threatened species.

Native Plant Protection Act

The Native Plant Protect Act (NPPA)(1977) (CFGC Sections 1900-1913) was created with the intent to "preserve, protect, and enhance rare and endangered plants in this State." The NPPA is administered by CDFG. The Fish and Game Commission has the authority to designate native plants as "endangered" or "rare", and to protect endangered and rare plants from take. The California Endangered Species Act of 1984 (CFGC 2050-2116) provided further protection for rare and endangered plant species, but the NPPA remains part of the Fish and Game Code.

California Desert Native Plants Act

The California Desert Native Plants Act of 1981 protects non-listed California desert native plants from unlawful harvesting on both public- and privately-owned lands. Harvest, transport, sale, or possession of specific native desert plants is prohibited unless a person has a valid permit. The provisions of this act are applicable within the boundaries of the counties of Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego and enforced by CDFG under California Fish and Game Code Section 1925-1926. San Bernardino County Development Code Section 88.01.060 regulates the removal of regulated desert native plants on property or combination of property under private or public ownership (County of San Bernardino 2007b). Joshua trees and yucca species are identified by the code as regulated desert native plants and are present within the Proposed Project footprint. If any protected plant species are to be removed, a Tree or Plant Removal Permit from the County is necessary.

Water Quality Certification and Report of Waste Discharge

The Regional Water Quality Control Board (RWQCB) regulates fills to waters of the U.S. (WoUS) under the Section 401 Water Quality Certification program, which in most instances, mirrors the federal CWA Section 404 compliance. In the absence of CWA Section 404 jurisdiction over special aquatic resource areas, jurisdiction over waters of the State is extended through the Porter-Cologne Act (Porter-Cologne). Porter-Cologne provides a comprehensive framework to protect water quality in California. It requires that any entity who plans to discharge waste where it might adversely affect waters of the state must first notify the RWQCB, which may impose requirements to protect water quality. (CWC § 13000 et seq.).

The Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers (SWANCC) decision created "gaps" relating to isolated waters that were no longer subject to the CWA. In response, the State Water Resources Control Board (SWRCB) issued a 2004 Memorandum (SWRCB 2004), stating that RWQCBs should consider setting a higher regulatory priority on discharges to "isolated waters" than to similar

discharges to federally-protected waters of similar value. The 2004 Memorandum further stated that "dredging, filling, or excavation of "isolated" waters constitutes a discharge of waste to waters of the State, and prospective dischargers are required to submit a Report of Waste Discharge (WDR) to the RWQCB and comply with other requirements of Porter-Cologne. Among the procedures recommended in the Memorandum was that the RWQCB refer to the same regulatory considerations generally applied to the issuance of Section 401 permits when issuing a WDR (SWRCB 2004).

Under the CWA Section 401, every applicant for a federal permit or license for any activity that may result in a discharge to a water body must obtain State Water Quality Certification (Certification) that the proposed activity would comply with state water quality standards. Most Certifications are issued in connection with USACE CWA Section 404 permits.

California Fish and Game Code (CFGC)

Sections 1600 through 1606 of the CFGC require that a Streambed Alteration Application be submitted to the CDFG for "any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake." The CDFG reviews the proposed actions and, if necessary, submits to the applicant a proposal for measures to protect affected fish and wildlife resources. The final proposal, which is mutually agreed upon by the Department and the applicant, is the Streambed Alteration Agreement. Often, proposed projects that require a Streambed Alteration Agreement also require a permit from the USACE under Section 404 of the CWA. In these instances, the conditions of the Section 404 permit and the Streambed Alteration Agreement may overlap. Furthermore, Section 3500 (et seq.) of the CFGC prohibits destruction of the nests or eggs of most native resident and migratory bird species. Section 3503.5 of the CFGC specifically prohibits the taking of raptors or destruction of their nests or eggs. Additionally, the State of California first began to designate species as "Fully Protected" prior to the creation of the California Endangered Species Act (CESA) and FESA. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction, and included fish, mammals, amphibians and, reptiles, birds, and mammals. Most fully-protected species have since been listed as threatened or endangered under CESA and/or FESA. The regulations that implement the Fully Protected Species Statute (CFGC Section 4700) provide that fully protected species may not be taken or possessed at any time. Furthermore, CDFG prohibits any state agency from issuing incidental take permits for fully protected species, except for necessary scientific research.

Local Regulation

San Bernardino County General Plan- Conservation Element

The County of San Bernardino General Plan Conservation Element provides direction regarding the conservation, development, and utilization of the County of San Bernardino's natural resources. The Conservation Element is distinguished by establishing policies that reconcile conflicting demands on natural resources, recognizing important biological areas distinguished by their sensitive biological features, including floral and faunal species of rare and/or endangered status, depleted or declining species, and species and habitat types of unique or limited distribution. Areas that are of biological importance include riparian woodland, yucca, creosote, and Joshua tree in the Mojave National Preserve. The programs outlined in the General Plan seek to protect and promote the restoration of sensitive plant

and animal species and their habitat, and avoidance, minimization, and mitigation measures to protect, enhance, and restore potential significant impacts.

The San Bernardino County General Plan establishes goals for renewable energy for the County. Conservation Element Policy CO 4.12 states that that the County shall promote siting of renewable energy resources. Conservation Element Goal CO 8 is to minimize energy consumption and promote safe energy extraction, uses and systems to benefit local, regional and global environmental goals. Policies under this goal include Policy CO 8.3, which includes assisting in efforts to develop alternative energy technologies that have minimum adverse effect on the environment and explore and promote newer opportunities for the use of alternative energy sources.

San Bernardino County Desert Native Plant Protection (§ 88.01.060).

The San Bernardino Desert Native Plant Protection regulations address the removal or harvesting of specified desert native plants in order to preserve and protect these plants and to provide for the conservation and wise use of desert resources. The provisions are intended to augment and coordinate with the Desert Native Plants Act (Food and Agricultural Code §§ 80001 et seq.) and the efforts of the State Department of Food and Agriculture.

The following desert native plants are included – provided they have stems two inches or greater in diameter, or six feet or greater in height:

- Dalea spinosa (smoketree).
- All species of the genus Prosopis (mesquites).
- All species of the family Agavaceae (century plants, nolinas, yuccas).
- Creosote Rings, ten feet or greater in diameter.
- All Joshua trees.
- Any part of any of the following species, whether living or dead:
- Olneya tesota (desert ironwood).
- All species of the genus Cercidium (palos verdes).

3.4.3 Affected Environment

The Proposed Project area is located in the west Mojave Desert, a predominantly flat, sparsely vegetated region that is interspersed with mountain ranges and dry lakes. Located in the rain shadow of the San Bernardino and San Gabriel mountains, annual average precipitation in the Victorville/Apple Valley area is less than six inches, most of which falls in January, February, and March. These lands are bordered by Sidewinder Mountain to the north, Apple Valley to the west, Lucerne Valley to the east, and Fifteenmile Valley to the south. The topography of the area ranges from relatively level on the valley floor to steep, rocky slopes with elevations between 3,200 and 4,750 feet (ft) above mean sea level (amsl). The Proposed Project area is located atop the northern portion of the Granite Mountains,

and the proposed access roads originate in the valleys and bajadas (compound desert alluvial fans) surrounding the mountain. Lucerne Dry Lake is located approximately two miles to the east of the Proposed Project area (approximately 0.25 mile east of the transmission line interconnection point). The Proposed Project area is undeveloped and relatively undisturbed, with two-track dirt roads throughout the valley that provide limited public access to the area (TtEC June 2009, Draft Biological Resources Report).

The Proposed Project area is located on BLM and private land (Appendix F - Figure 3 within the Draft Biological Resources Report prepared by TtEC in June 2009). The Proposed Project is within the BLM-managed CDCA Class L use area. Small portions of the proposed north access road adjacent to Highway 247 and the transmission line corridor are located in *Unclassified Lands*, which have not been placed within a multiple use class. Approximately 742 acres of the Project site also lies on private lands (Appendix F).

The northwest portion of the Proposed Project area and portions of the proposed north, west, and northeast access roads are located within an ACEC designated by the BLM for Bendire's Thrasher (Appendix F - See Figure 2 within the Bendire's Thrasher Survey Report prepared by TtEC in June 2008). The proposed locations of the wind turbines and associated facilities are not located within any BLM ACECs. No other ACECs are located within the Proposed Project area. There are no Wilderness Areas, Desert Wildlife Management Areas (DWMA), or USFWS Critical Habitat areas within the Proposed Project area.

Additionally, the Proposed Project area is located within one of the BLM's 223 nationwide designated Key Raptor Areas (KRA). This KRA, named the Newberry/Granite Mountains KRA, covers 250,000 acres, and it is recognized by the BLM as important for nesting, migrating, or wintering habitat under the Raptor Habitat Management Multiple-Use Mandate (Appendix F - TtEC July 2008, Raptor Nesting Survey Report)

Resources Reviewed

URS reviewed the biological technical reports prepared for the Proposed Project by TtEC and Detect, Inc. Provided in Appendix F and listed below.

- Draft Biological Resources Report (TtEC June 2009)
- Draft Waters Survey Report (TtEC August 2008)
- Annual Avian Survey Report (TtEC April 2009)
- Draft Addendum to Spring 2008 Avian Survey Report (TtEC April 2009)
- Avian Survey Report fall 2007/winter 2008 (TtEC May 2008)
- Avian Survey Report (TtEC August 2008)
- Bendire's Thrasher Survey Report (TtEC June 2008)
- Raptor Nesting Survey Report (TtEC July 2008)
- Desert Tortoise Survey Report (TtEC June 2008)
- Botanical Survey Report (TtEC August 2008)
- Vulture and Raptor Migration Observations (TtEC January 2008)
- Avian Radar Screening Assessment (Detect Inc. May 2007)

- Bat Acoustic Survey Report (TtEC April 2009)
- Bat Acoustic Survey 6-month Interim Report (TtEC December 2008)
- Permanent and Temporary Vegetation Impact Tables for Proposed Project Facilities (TtEC January 2010)

Methods

According to the reports prepared for the Proposed Project and provided in Appendix F, prior to the field surveys, a literature review of available data for the Proposed Project area and vicinity was conducted to identify which special status species and which significant natural communities are likely to be present. The literature review included CDFG's California Natural Diversity Database (CNDDB) of the Apple Valley North, Apple Valley South, Fairview Valley, Whitehorse Mountain, Lucerne Valley, and Fifteenmile Valley U.S. Geological Survey (USGS) 7.5' topographical quadrangles.

Pertinent maps, scientific literature, websites, and regional biological field guides were also reviewed. In conjunction with the literature review, field surveys of the proposed access roads were conducted to identify habitats and vegetation communities and to assess the potential for special status species within the Proposed Project area. The BLM District Office and Barstow Field Office were also consulted to identify any biological concerns in the Proposed Project area. The CDFG and USFWS via letter were also contacted to request identification of special status species and concerns in the Proposed Project area as well. Key resources and references reviewed included the following environmental documents and websites:

- Final Environmental Impact Report and Statement for the BLM West Mojave Plan
- San Bernardino County General Plan
- CNDDB
- USFWS informal species list for San Bernardino County (http://www.fws.gov/ventura/speciesinfo/spplists/sl_sanbernardino_co.cfm)
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants
- California Invasive Plant Council (Cal-IPC) (http://www.cal-ipc.org)
- CalFlora (http://www.calflora.org)
- Avian Radar Screening Assessment for the Granite Mountain Wind Energy Project (Detect 2007)
- Other useful documents (e.g., Raptor Habitat Management under the U.S. Bureau of Land Management Multiple-Use Mandate)

Species accounts were then compiled for special status species identified in the literature search to evaluate their likelihood of occurrence within the Proposed Project area. Species determined not likely to occur within the Proposed Project area based on available data and lack of suitable habitat or soils were not surveyed for, and were eliminated from further consideration (Table 3.4-B). Field surveys were then conducted for species identified as having a moderate to high likelihood of occurrence within the Proposed Project area. State

and federal agency suggestions and guidelines were considered in determining which surveys to conduct and were incorporated into the survey protocols.

During public scoping, discussions with the BLM, and the literature review, an uncommon, but not state or federally listed, subspecies of butterfly, the Ford's Indra swallowtail (*Papilio indra fordi*) and its obligate larval host plant, the Panamint cymopterus shrub (*Cymopterus panamintensis*), were identified as occurring in the Proposed Project area and vicinity. At the recommendation of the BLM, surveyors identified and mapped incidental observations of the obligate larval host plant during 2008 to assess its distribution and location.

Detailed methods for botanical; special aquatic resource areas; avian; desert tortoise; and bat surveys can be found in Appendix F within the individual biological technical reports listed above under Resources Reviewed.

A summary of the types of surveys conducted, the date of the survey, and by whom the survey was conducted is detailed in Table 3.4-A below. Table 3.4-B identifies the potential for occurrence of special status wildlife and plant species in the Proposed Project area.

Table 3.4-A: Biological Survey Dates

SURVEY DATE	TYPE OF SURVEY	SURVEY CONDUCTED BY:
Avian		
June 5, 1986; May 15, 1987; and April 20, May 8, and June 3, 2001	Bendire's thrashers point count surveys	England and Laudenslayer, and Jones & Stokes Associates
April 8, April 15, April 22, and April 30, 2008	Bendire's thrashers surveys	TtEC
June 21, 2006	Burrowing owl	TtEC
May 21 and 22, 2007	Burrowing owl presence-or-absence surveys concurrently with desert tortoise surveys	TtEC
March 31, April 1 and 2, and May 20, 2008	Burrowing owl presence-or-absence surveys concurrently with desert tortoise surveys	TtEC and Applied Biological Consulting
August 15 – November 1 and March 15 – June 1, 2002-2006	Avian radar screening	DeTect Inc.
September 17, 25, 28 and October 1, 2, 5, 8, 15, and 16, 2007	Avian focused fall migration surveys	TtEC
February 11 and 25, March 12 and 27, and April 10, 2008	Avian spring migration surveys	TtEC
October 2,15, and 30, November 13 and 27, and December 10 and 23, 2007	Avian diurnal and incidental fixed-point and migration surveys	TtEC
January 8 and 22, February 5 and 19, March 5 and 20, April 7 and 21, May 1,15, and 29, June12 and 26, July 10 and 24, August 7 and 21, September 4 and 18, 2008	Avian diurnal and incidental fixed-point and migration surveys	TtEC
June 15, 2007, March 11 and 18, April 8, 15, 22, and 30, 2008	Raptor nesting survey	TtEC
Mammals		
April 2008	Reconnaissance-level bat roost and hibernacula survey	TtEC
April 2008 – April 2009	Bat acoustic survey – 6-month interim report (continuing survey through April 2009)	TtEC

SURVEY DATE	TYPE OF SURVEY	SURVEY CONDUCTED BY:
Reptiles		
May 21 and 22, 2007	A presence or absence desert tortoise survey (Unpublished Report, Tetra Tech 2007).	TtEC
March 31, April 1 and 2, and May 20, 2008	Protocol-level desert tortoise survey	TtEC and Applied Biological Consulting
Invertebrates		
April 15 – 18 and May 21, 2008	Ford's Indra swallowtail survey In conjunction with botanical surveys	TtEC
Vegetation		
April 15 – 18 and May 21, 2008	Botanical surveys	TtEC
Special Aquatic Resource Areas		
June 26 – 29, 2007, April 9 – 11, and May 21, 2008	Jurisdictional waters survey conducted according to the Corps Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Corps 2006)	TtEC and eGIS Environmental and GIS Services, LLC

Table 3.4-B: Special Status Wildlife and Plant Species Observed within the BSA and Their Potential to Occur

Common Name	Scientific Name	Status	Surveyed or Eliminated from Further Consideration	Potential for Occurrence
Vegetation				
Alkali Mariposa Lily	Calochortus striatus	BLM Sensitive; CNPS 1B.2	Eliminated. Requires moist habitat	Low
Barstow Wooly Sunflower	Eriophyllum mohavense	BLM Sensitive; CNPS 1B.2	Eliminated. WRA is outside of known range	Low
Cushenbury Buckwheat	Eriogonum ovalifolium var. vineum	FE; CNPS 1B.1	Eliminated. Requires carbonate soils	Low
Cushenbury Milkvetch	Astragalus albens	FE; CNPS 1B.1	Eliminated. Requires carbonate soils	Low
Cushenbury Oxytheca	Oxytheca parishii var. goodmaniana	FE; CNPS 1B.1	Eliminated. Requires carbonate soils	Low
Desert Cymopterus	Cymopterus deserticola	BLM Sensitive; CNPS 1B.2	Surveyed	Moderate
Lane Mountain Milkvetch	Astragalus jaegerianus	FE; CNPS 1B.1	Eliminated. WRA is outside of known range. Highly localized populations not near the WRA	Low
Mojave Monkeyflower	Minulus mohavensis	BLM Sensitive; CNPS 1B.2	Eliminated. WRA is outside of known range	Moderate
Mojave Tarplant	Hemizonia mohavenusis	SE; BLM Sensitive; CNPS 1B.3	Eliminated. No habitat within WRA	Low
Panamint Cymopterus	Cymopterus panamintensis	No special status ranking (surveyed based on a recommendation from BLM)	Surveyed	Observed during field surveys
Parish's Daisy	Erigeron parishii	CNPS 1B.1	Eliminated. Requires limestone soils	Low
Parish's Phacelia	Phacelia parishii	CNPS 1B.1	Eliminated. No habitat within WRA	Low
Red Rock Poppy	Eschscholzia minutiflora ssp. Twisselmannii	BLM Sensitive; CNPS 1B.2	Eliminated. WRA is outside of known range	Low
Avian Species				
American White Pelican	Pelecanus erythrorhynchos	SSC; MBTA	Surveyed	Observed during field surveys
Bald Eagle	Haliaeetus leucocephalus	SE; FP; BGEPA; MBTA	Surveyed	Observed during field surveys
Bendire's Thrasher	Toxostoma bendirei	SSC; BLM Sensitive; MBTA	Surveyed	Observed during field surveys
Burrowing Owl	Athene cunicularia	SSC; BLM Sensitive; MBTA	Surveyed	Observed during field surveys
Ferruginous Hawk	Buteo regalis	BLM Sensitive; MBTA	Surveyed	Observed during field surveys
Golden Eagle	Aguila chrysaetos	FP; BGEPA; MBTA	Surveyed	Observed during field surveys

Common Name	Scientific Name	Status	Surveyed or Eliminated from Further Consideration	Potential for Occurrence
Loggerhead Shrike	Lanius ludovicianus	SSC; MBTA	Surveyed	Observed during field surveys
Northern Harrier	Circus cyaneus	SSC; MBTA	Surveyed	Observed during field surveys
Swainson's Hawk	Buteo swainsoni	ST; MBTA	Surveyed	Observed during field surveys
Willow Flycatcher	Empidonax trailii	SE; MBTA	Surveyed	Observed during field surveys
Yellow Warbler	Dendroica petechia	SSC; MBTA	Surveyed	Observed during field surveys
Mammals				
Nelson's Bighorn Sheep	Ovis Canadensis nelsoni	FP; BLM Sensitive	Eliminated. No documented population in WRA	Low
Mojave Ground Squirrel	Spermophilus mohavensis	ST	Eliminated. WRA is outside of known range.	Low
Pallid San Diego Pocket Mouse	Chaetodipus fallax pallidus	SSC	Eliminated. Lack of suitable habitat	Low
(Bat) California Leaf-nosed Bat	Macrotus californicus	SSC; BLM Sensitive	Surveyed	Low
(Bat) Cave Myotis	Myotis velifer	SSC; BLM Sensitive	Surveyed	Low
(Bat) Fringed Myotis	Myotis thysanodes	SSC; BLM Sensitive	Surveyed	Low
(Bat) Long-eared Myotis	Myotis evotis	BLM Sensitive	Surveyed	Low
(Bat) Pallid Bat	Antrozous pallidus	SSC; BLM Sensitive	Surveyed	Observed during field surveys
(Bat) Small-footed Myotis	Myotis ciliolabrum	BLM Sensitive	Surveyed	Moderate
(Bat) Spotted Bat	Euderma maculatum	SSC; BLM Sensitive	Surveyed	Moderate
(Bat) Townsend's Big-eared Bat	Corynorhinus townsendii	SSC; BLM Sensitive	Surveyed	Observed during field surveys
(Bat) Western Mastiff Bat	Eumops perotis californicus	SSC; BLM Sensitive	Surveyed	High
(Bat) Yuma Myotis	Myotis yumanensis	BLM Sensitive	Surveyed	Low
Reptiles				
Desert Tortoise	Gopherus agassizii	FT; ST	Surveyed	Observed during field surveys
Invertebrates				
Ford's Indra Swallowtail	Papilio indra fordi	No special status ranking (surveyed based on a recommendation from BLM)	Surveyed	High

FE = Federally Endangered
FT = Federally Threatened
SE = State Endangered
ST = State Threatened
FP = California Department of Fish and Game Fully Protected Animal
SSC = California Species of Special Concern
MBTA = Migratory Bird Treaty Act
BGEPA = Bald and Golden Eagle Protection Act
CNPS 1B = Rare, threatened, or endangered in California and elsewhere

0.1 = Seriously endangered in California
0.2 = Fairly threatened in California
0.3 = Not very threatened in California

Results

The following sub-section provides a summary of the surveys and research results. Detailed survey limits, results, acreage and impact calculations by habitat type, and analysis assumptions are provided within the technical biological reports and impact tables of Appendix F.

Special Aquatic Resource Areas

No wetlands were found within the Proposed Project area during the literature review or field surveys. A total of 27 ephemeral drainage features were identified within the Proposed Project area (Appendix F - Draft Biological Resources Report, TtEC June 2009,). These features include ephemeral drainages, dry washes, and ravines. As described in the Draft Waters Survey Report contained inAppendix F, the ephemeral drainages were categorized as follows:

Category 1 drainages are small (generally 1 to 6 ft wide), shallow channels with weak bed and bank features; are located in the bajadas and valleys; and gradually become less defined as storm water dissipates. The substrate is sandy to gravelly and the beds typically contain vegetation. These features are likely to migrate during large storm events and are part of braided fluvial systems.

Category 2 drainages are larger (generally 7 to 15 ft wide); have more defined bed and bank features; and are generally located near the base of the mountain where runoff accumulates. Bed substrate consists of sand and larger rocks to boulders and beds are typically devoid of vegetation. These drainages are less likely to migrate during large storm events. Category 2 drainages are generally located at the base of the mountains at points where runoff accumulates from Category 3 drainages. Category 2 drainages dissipate into Category 1 drainages as they travel down slope, becoming smaller as water percolates into the soil and is lost through evaporation.

Category 3 drainages are wide (generally greater than 15 ft) ravines and gulches with no bed features and are located on the slopes of the mountain. Substrate in Category 3 drainages consists of coarse sand to large rocks and boulders, and channels contain vegetation. These drainages are the main courses for storm water runoff from the top of the mountain and feed the Category 1 and 2 drainages.

Of the 27 ephemeral drainages, 15 were Category 1, six were Category 2, and six were Category 3. Category 1 drainages are the most commonly crossed by the Proposed Project facilities. Of the 11 crossings that would bisect the northeast access route, seven were Category 1, three were Category 2, and one was Category 3. Of the 12 crossings that would bisect the proposed north and west access routes, seven were Category 1, three were Category 2, and two were Category 3. The proposed transmission line route would cross three Category 1, and three Category 3 crossings.

None of the ephemeral drainages within the Proposed Project area appear to meet established criteria for jurisdiction under CWA 404 or 401. It is anticipated that the CDFG may take jurisdiction over the Category 2, and Category 1 features. Drainages falling within

Category 2 are those that show more defined bed and bank features and are most likely to contain water consistently during large storm events. The RWQCB jurisdiction under Porter-Cologne would likely extend to all 27 ephemeral drainages.

Vegetation

Detailed survey limits, results, acreage and impact calculations by habitat type, and analysis assumptions for vegetation are provided within the technical biological reports and impact tables of Appendix F. Mojave creosote bush scrub and Mojave mixed woody scrub are the predominant vegetation communities present in the Proposed Project area (TtEC August 2008, Botanical Survey Report). Mojave creosote bush scrub is located within the valleys. As elevation increases, the community transitions to Mojave mixed woody scrub. In addition to the above communities, two smaller, isolated communities are present within the Proposed Project area: an area of Joshua tree woodland at the western end of the proposed north access road, and an area of partially stabilized desert sand fields along the proposed west access road (Appendix F - TtEC August 2008, Botanical Survey Report). The four vegetation communities found in the Proposed Project area are described below.

Mojave creosote bush scrub - The valleys surrounding the Proposed Project area are dominated by Mojave creosote bush scrub, which is defined by widely spaced shrubs up to ten ft in height that are found below 4,000 ft above sea level (asl) with well-drained soils. The Proposed Project area experiences slight shifts in species dominance and composition throughout this community, but common shrubs (including cacti and yucca) include creosote bush (*Larrea tridentata*), burro-weed (*Ambrosia dumosa*), cheese bush (*hymenoclea salsola*), beavertail cactus (*Opuntia sp.),* and Mojave yucca (*Yucca schidigera*). Dominant annuals present during the botanical surveys included devil's lettuce (*Amsinckia tessellata),* stork's bill (*Erodium cicutarium*), and Phacelia (*Phacelia Sp.).*

Mojave Mixed Woody Scrub - As elevation increases within the Proposed Project area, the Mojave creosote bush scrub community transitions into the Mojave mixed woody scrub community where Joshua trees (*Yucca brevifolia*), Mojave yucca, and additional species of low-lying shrubs such as bladder sage (*Salazaria mexicana*), boxthorn (*Lycium Sp.),* Mormon tea (*Ephedra Sp*.), and saltbush (*Atriplex polycarpa*) begin to appear. The Mojave mixed woody scrub community is defined as open scrub between 2,000 and 5,000 ft amsl with well-drained, shallow soil typically derived from granitic parent material. Many shrubs found within this community are also found within Mojave creosote bush scrub such as creosote bush, Mormon tea, and bladder sage. Additional species such as California buckwheat (*Eriogonum fasciculatum*), pencil cholla (*Cylindropuntia ramosissima*), and hop-sage (*Grayia spinosa*) are also present. There is a dense stand of Mojave yucca along the north access road as the Mojave creosote bush scrub transitions to Mojave mixed woody scrub.

Joshua Tree Woodland - Joshua trees are found intermittently throughout the Proposed Project area in the Mojave mixed woody scrub community; however, a higher density of Joshua trees is present to the north/northeast of Granite Mountain in the valley between the Granite and Sidewinder mountains. Typically located on gentle, rocky slopes with sandy or gravelly well-drained soils between 2,500 and 7,500 ft amsl, this community consists of widely-spaced Joshua trees, which are considered dominant because they are the only tree-like species present. The understory of this community is interspersed with shrubs found in Mojave creosote bush scrub and Mojave mixed woody scrub.

Partially Stabilized Desert Sand Fields - A small, isolated area of partially stabilized desert sand fields is located along the proposed west access road. The partially stabilized desert sand fields are areas of sand accumulations in the desert containing vegetation that stabilize soils but that do not necessarily form dune landforms. In this community, fine desert sand has accumulated and contains Joshua trees, scattered low shrubs, and annual forbs adapted to survive in sandy soils. Species observed in this community include sand verbena (*Abronia latifolia*), scale-bud (*Anisocoma acaulis*), white tidy-tips (*Blepharipappus Glandulosus*), Salvia sp., cheese bush, and cotton-thorn (*Tetradymia spinosa longispina*). This habitat is heavily utilized by off-highway vehicles (OHV).

Special-Status Plants

Potential habitat for one special-status plant (Mojave monkeyflower [*Mimulus mohavensis*]) and three locally protected plant species (Joshua tree, yucca, and Panamint cymopterus) occur within the Proposed Project area (Appendix F - TtEC August 2008, Botanical Survey Report and TtEC June 2009, Draft Biological Resources Report).

Mojave monkeyflower - The Mojave monkeyflower (BLM sensitive) blooms between April and June, and the amount and timing of precipitation is most likely a significant factor that facilitates germination. It is possible that the BSA did not receive adequate spring rainfall to promote germination prior to surveys, and thus this species would not have been identifiable during surveys. The nearest known occurrence if this species is within BLM's Mojave Monkey Flower ACEC located approximately 15 miles to the northwest of the Proposed Project area. Suitable habitat for this species occurs within the Proposed Project area.

Joshua tree and Yucca species - Joshua tree and yucca species, locally sensitive species protected under the California Desert Native Plants Act, and San Bernardino County ordinance are found throughout the Proposed Project area within Mojave creosote bush scrub, Mojave mixed woody scrub, Joshua tree woodland, and partially stabilized desert sand field communities.

Panamint cymopterus - Panamint cymopterus is uncommon in the Proposed Project area and has no federal, state, BLM, or CNPS special status ranking; however, surveys were conducted at the recommendation of BLM to gain a better understanding of the Granite Mountain population.

Panamint cymopterus was found within the Proposed Project area. A member of the carrot family (Apiaceae), Panamint cymopterus is a perennial shrub endemic to California and known to occur within the Granite Mountains. This small shrub flowers from March to May and inhabits rocky slopes and canyon walls between 2,000 and 8,000 ft asl in the Mojave Desert (Baldwin et al. 2002). Panamint cymopterus plants were found during the spring of 2008. All plants were situated between rocks on steep slopes between 2,920 and 3,700 ft amsl. The plants were typically found in small groups on the southeast side of the Granite Mountains and on adjacent Whitehorse Mountain.

For additional information associated with the plant species observed during pedestrian based field surveys, please review the technical biological reports found within Appendix F.

Invasive Species

Only three non-native plant species were identified during field surveys: stork's bill, cheat grass, and foxtail chess. These species are widespread throughout California, and categorized as non-native, plants by the California Invasive Plant Council (Cal-IPC 2008). These species represent a small percentage of total species composition of the region, but they are common throughout the Proposed Project area and contribute to a relatively large portion of the plant biomass in the valleys.

Wildlife

Numerous wildlife surveys (listed above in Table 3.4-A) have been conducted for the Proposed Project to document wildlife use. Detailed results of these surveys and lists of all species observed are provided in Appendix F. The Granite Mountains contain habitat for the Ford's Indra swallowtail butterfly (*P. indra fordi*), as well as an uncommon subspecies of the Indra swallowtail butterfly whose reproductive success depends on the presence of the Panamint cymopterus shrub. The Ford's Indra swallowtail's distribution is limited to an isolated area in southern California that overlaps the BLM's West Mojave Plan boundaries. No evidence of Ford's swallowtail, including eggs, larvae, or adults, was observed during the botanical surveys or during any other spring 2008 biological surveys (Appendix F); however, the Granite Mountains are a known breeding ground for this species.

Special-Status Wildlife

Based on the results of wildlife surveys conducted for the Proposed Project, a total of 13 special-status wildlife species were observed within the Proposed Project area (Table 3.4-B) and include the following:

- American white pelican (*Pelecanus erythrorhynchos*)
- Bald eagle (*Haliaeetus leucocephalus*)
- Bendire's thrasher (*Toxostoma bendirei*)
- Golden eagle (*Aquila chrysaetos*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Northern harrier (*Circus cyaneus)*
- Swainson's hawk (*Buteo swainsoni*)
- Willow flycatcher (*Empidonax traillii*)
- Yellow warbler (*Dendroica petechia*)
- Burrowing Owl (*Athene cunicularia*)
- Pallid bat (*Antrozous pallidus*)
- Townsend's big-eared bat (*Plecotus townsendii*)
- Desert tortoise (*Gopherus agassizii*)

For additional information associated with the wildlife species observed during pedestrian based field surveys, please review the technical biological reports found within Appendix F.

3.4.4 Environmental Consequences

Alternative 1: Proposed Project

Under this Alternative, the Proposed Project is subject to the plans, policies, and regulations of federal, state, and local agencies, including plans from USFWS, CDFG, BLM, and the County of San Bernardino.

Proposed Project construction would require the following ground-disturbing activities:

- Identifying and constructing the access road;
- Clearing the structure sites (including construction staging areas turbine pads, stockpile areas, crushing and batch plant location, and building pads);
- Blasting and its associated noise;
- Installing foundations;
- Assembling and erecting the structures;
- Installing substations and an O&M building;
- Trenching of the electrical distribution system;
- Construction of an overhead 220 kV T-line and
- Site cleanup.

Various phases of construction would occur simultaneously at different locations throughout the construction process. Proposed Project construction under this Alternative would result in the removal and some permanent loss of native plant communities, loss or disturbance of some special-status wildlife species, and fill of some special aquatic resource areas. These potential adverse effects are discussed below.

Vegetation

Vegetation resources could be directly and indirectly affected by construction and operational activities associated with the Proposed Project (Appendix F - TtEC January 2010, Permanent and Temporary Vegetation Impact Tables for Proposed Project Facilities). Construction of the Proposed Project would require vegetation clearing or other ground disturbance that would result in both temporary disturbance and permanent loss of existing vegetation and habitat within the construction area (i.e., conversion of habitat as detailed within Appendix F - TtEC January 2010, Permanent and Temporary Vegetation Impact Tables for Proposed Project Facilities).

Although Proposed Project facilities would result in the loss or conversion of native vegetation communities (Appendix F - TtEC January 2010, Permanent and Temporary Vegetation Impact Tables for Proposed Project Facilities), the disturbance is not considered substantially adverse because these communities are common throughout the Granite Mountains and the region. No substantial loss of a plant community is anticipated and fragmentation or isolation of plant communities would not occur. In addition, implementation of Alternative 1 would not conflict with local, federal, or state policies or regulations, including the West Mojave Plan, which governs the protection of special-status plant species.

Special-Status Plants

Potential habitat for one special-status plant (Mojave monkeyflower) and three locally protected plant species (Joshua tree, yucca, and Panamint cymopterus) are located within the Proposed Project area and are discussed below.

Mojave monkeyflower - Botanical surveys conducted in April and May 2008 within the Proposed Project area did not locate this species; however, 2008 spring rainfall may not have been adequate for germination. Suitable habitat for Mojave monkeyflower is common throughout the Proposed Project area and since surveys were not conducted under optimal conditions, the potential for this species to be present within the Proposed Project area should not be discounted. If Mojave monkeyflower is present within permanent and/or temporary impact areas, Proposed Project construction could remove individual plants (TtEC January 2010, Permanent and Temporary Vegetation Impact Tables for Proposed Project Facilities). This impact is considered substantially adverse based on the Impact Criteria defined in Section 3.4.1 above; however, impacts would be reduced with implementation of the avoidance, minimization, and mitigation measures detailed in Section 3.4.5.

Joshua tree and Yucca species - Joshua tree and yucca species are found within all four vegetation communities in the Proposed Project area. Vegetation clearing associated with Proposed Project construction could remove protected Joshua trees and Yucca species (TtEC January 2010, Permanent and Temporary Vegetation Impact Tables for Proposed Project Facilities). This impact is considered substantially adverse based on the Impact Criteria defined in Section 3.4.1 above, however impacts would be reduced with implementation of the avoidance, minimization, and mitigation measures detailed in Section 3.4.5.

Panamint cymopterus - This plant species is the host plant to the Ford's Indra swallowtail butterfly, an uncommon subspecies of the Indra swallowtail butterfly that is endemic to the Granite Mountains and whose limited distribution overlaps with the Proposed Project area. Within the Proposed Project area, a total of 12 Panamint cymopterus was found along the transmission line corridor during botanical surveys conducted in spring 2008. However, no evidence of Ford's Indra swallowtail, including eggs, larvae, or adults, was observed during botanical or other biological surveys conducted in April and May 2008, which coincided with the breeding and egg-laying period (late March to mid May) of this species.

Because the Ford's Indra swallowtail butterfly is known to occur in the Granite Mountains and its host plant is present along the proposed transmission line corridor, vegetation clearing associated with Proposed Project construction could remove the host plants of the Ford's Indra swallowtail butterfly, which could result in the mortality of eggs, larvae, or adults of the species. Based on the limited distribution of the Ford's Indra swallowtail butterfly, this impact is considered substantially adverse based on the Impact Criteria defined in Section 3.4.1 above, since it could substantially reduce the already small population of this subspecies. However, with implementation of avoidance, minimization, and mitigation measures identified in Section 3.4.5 below, impacts would be reduced.

Invasive Species

Three non-native plant species (stork's bill, cheat grass, and foxtail chess) were identified within the Proposed Project area. These species are widespread throughout California and are categorized as non-native plants by the California Invasive Plant Council. Because the

Proposed Project area is relatively undisturbed, non-native plant infestations are relatively low. Furthermore, the three non-native plants that were documented during surveys are common throughout the Proposed Project area and have become naturalized within these existing habitats.

Construction equipment, vehicles, or imported materials have the potential to introduce new nonnative invasive plants into the Proposed Project area during Proposed Project construction. The introduction of invasive species can have long-term effects on native plant communities, wildlife habitat, and special-status plants and animals by displacing native species and resulting in the overall degredation of native habitats. Areas of particular concern include newly graded areas and areas where existing vegetation is disturbed and soils are exposed. This impact is considered substantial based on the impact criteria defined in Section 3.4.1 above;however, impacts would be reduced with implementation of the avoidance, minimization, and mitigation measures detailed in Section 3.4.5.

Wildlife

Wildlife could be both directly and indirectly affected by construction and operational activities associated with the Proposed Project. Potential impacts to wildlife resulting from the development of a wind energy project were analyzed as part of the *Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-administered Lands in the Western United States* (BLM 2005). These impacts are summarized below. Additionally, Section 3.4.5 includes a complete listing of the mitigation measures designed to avoid, offset, and minimize the impacts detailed below.

Construction activities may adversely affect wildlife through:

- Habitat reduction, alteration, or fragmentation;
- Introduction of invasive vegetation;
- Injury or mortality of wildlife;
- Decrease in water quality from erosion and runoff;
- Fugitive dust;
- Noise;
- Exposure to contaminants; and
- Interference with behavioral activities.

Wildlife may be affected by operation of the Proposed Project through:

- Electrocution from transmission lines;
- Noise;
- Presence of, or collision with, turbines, meteorological towers, and transmission lines;
- Maintenance activities;
- Exposure to contaminants;
- Disturbance associated with activities of the wind energy Project workforce;

- Interference with migratory behavior;
- Increased potential for fire; and
- Injury or mortality of wildlife.

Among these, the presence of, or collisions with, facility structures represent the greatest potential hazard to bird/bat species. In some instances, turbines, transmission lines, and other facility structures may interfere with behavioral activities, including migratory movements, and may provide additional perch sites for raptors, thereby increasing predatory levels on other wildlife (i.e., predation of juvenile desert tortoises by ravens).

Wildlife may also be affected by human activities that are not directly associated with the Proposed Project or its workforce, but are instead associated with the potentially increased access to BLM-administered lands that had previously received little use. The construction of new access roads or improvements to old access roads may lead to increased human access into the area.

Potential impacts associated with increased access include:

- Disturbance of wildlife from human activities, including an increase in legal and illegal take and an increase of invasive vegetation, and
- An increase in the incidence of fires.

Although the Proposed Project would result in the loss or conversion of native habitats used by common wildlife within the region (TtEC January 2010, Permanent and Temporary Vegetation Impact Tables for Proposed Project Facilities), the disturbance is not considered substantial based on the Impact Criteria defined in Section 3.4.1 above. Affects to wildlife resulting from short-term and long-term activities could temporarily deter individual animals from utilizing the Proposed Project area. Some displacement may occur with impediments to animal movement. However, these habitats are common throughout the region, and with the implementation of avoidance, minimization, and mitigation measures identified in Section 3.4.5, potentially adverse impacts would be reduced. Specific measures to mitigate avian and bat collision include locating facilities outside of major migratory flyways. However, migrants (e.g., turkey vultures, American white pelicans) may still occur in the Proposed Project area, and resident birds and bats may still collide with turbines and other structures/facilities during operation of the Proposed Project.

Special-Status Wildlife

As listed in Table 3.4-B, a total of 13 special-status wildlife species have the potential to occur within the Proposed Project area.

Based on 2007 and 2008 desert tortoise surveys conducted for the Proposed Project, two live desert tortoises, five portions of tortoise carcasses, and 12 tortoise burrows were identified in Mojave creosote bush scrub habitat within and adjacent to the Proposed Project area. Construction and operational activities associated with the Proposed Project have the potential to directly and indirectly affect desert tortoises. Direct effects may include crushing of unseen individuals during initial Project grading/vegetation removal and movement of equipment within or adjacent to suitable habitat, vehicle collisions from use of access roads, destruction of burrows, entrapment of individuals in trenches and excavation pits, and handling of individual tortoises during relocation. The affects of construction and operation

of facilities within the Proposed Project area would also include increased raven predation from the presence of perching structures and from illegal trash dumping.

Overall, implementation of the Proposed Project could result in the permanent loss of potential desert tortoise habitat (Appendix F - TtEC January 2010, Permanent and Temporary Vegetation Impact Tables for Proposed Project Facilities) and in the "take" of a federal and state listed species. This impact is considered significant based on the impact criteria defined in Section 3.4.1 above. However, with the implementation of avoidance, minimization, and mitigation measures identified in Section 3.4.5, potentially adverse impacts would be reduced. Discretionary approvals from the CDFG and USFWS would be required.

As previously stated, construction and operational effects to avian and bat species could occur as a result of disturbance from increased dust, noise, and human presence associated with Proposed Project activities, and the alteration and fragmentation of habitat due to the placement of turbines, associated infrastructure, substations, and access roads (Appendix F - TtEC January 2010, Permanent and Temporary Vegetation Impact Tables for Proposed Project Facilities). Well-publicized and documented operational impacts from turbine operation include avian and bat collisions with turbines and transmission lines, changes in migration or foraging patterns as a result of noise generated by operation of the turbines, and disturbance of birds/bats due to the presence of maintenance personnel. Effects could also include the loss of native habitat due to the introduction of non-native invasive plants that replace the native species. These impacts are considered substantially adverse based on the impact criteria defined in Section 3.4.1 above. However, with the implementation of avoidance, minimization, and mitigation measures identified in Section 3.4.5, potentially adverse impacts would be reduced.

Special Aquatic Resource Areas

No wetlands or surface water were identified within the Proposed Project area during surveys conducted for the Proposed Project. However, 27 ephemeral drainages were found throughout the Proposed Project area. Proposed Project construction associated with the access roads and the transmission line corridor could directly affect (temporary or permanent fill) a portion of up to 27 drainages within the Proposed Project area.

Based on preliminary information regarding these aquatic resource areas, none of the drainages are likely to qualify as Waters of the U.S. and therefore would not be regulated by the USACE under Sections 404 of the CWA. However, the RWQCB's legal authority in accordance with Section 401 of the CWA and as defined within Section 13050(e) (et seq.) of the California Water Code (CWC) via the Porter-Cologne and CDFG jurisdiction pursuant to Section 1600 (et seq.) of the CFGC would likely apply to these drainages. Fill, obstruction, diversion, and so forth of special aquatic resource areas is considered substantially adverse based on the impact criteria defined in Section 3.4.1 above. However, with the implementation of avoidance, minimization, and mitigation measures identified in Section 3.4.5, potentially adverse impacts would be reduced. A CDFG Streambed Alteration Agreement, and RWQCB 401 Permit would be required. These agencies can only authorize actions if their approval would not result in a net loss of special aquatic resource areas or natural drainage courses. Compliance with the requirements of the CDFG and RWCQB would ensure that no net loss would occur and would help to minimize adverse impacts to drainage courses.

Alternative Access Route 1A

Access Route 1A crosses Mojave creosote bush scrub and Mojave mixed woody scrub communities. Although this alternative access route would also result in the loss or conversion of native vegetation communities (TtEC January 2010, Permanent and Temporary Vegetation Impact Tables for Proposed Project Facilities), these habitats are common throughout the region (Appendix F - TtEC June 2009, Draft Biological Resources Report). Disturbance is not considered adverse based on the impact criteria defined in Section 3.4.1 above.

Alternative Access Route 1B

Access Route 1B crosses four native plant communities (i.e., Mojave creosote bush scrub, Mojave mixed woody scrub, Joshua tree woodland, and partially stabilized desert sand fields). This Alternative access route would also result in the loss or conversion of native vegetation communities (Appendix F - TtEC January 2010, Permanent and Temporary Vegetation Impact Tables for Proposed Project Facilities); however, these habitats are common throughout the region (Appendix F - TtEC June 2009, Draft Biological Resources Report). However, Joshua tree woodland, a sensitive natural community would be converted. This impact is considered potentially adverse based on the impact criteria defined in Section 3.4.1 above. With the implementation of avoidance, minimization, and mitigation measures detailed in Section 3.4.5, potentially adverse impacts would be reduced.

Alternative Jasper Substation 1A- Public Land

Alternative Substation 1A would result in the loss or conversion of native vegetation communities (Appendix F - TtEC January 2010, Permanent and Temporary Vegetation Impact Tables for Proposed Project Facilities). This disturbance is not considered significant based on the impact criteria defined in Section 3.4.1 above, because the impacted habitats are common throughout the region (Appendix F - TtEC June 2009, Draft Biological Resources Report). With the implementation of avoidance, minimization, and mitigation measures identified in Section 3.4.5, potentially significant mpacts would be reduced. Additionally, special status plants species impacts would be avoided pursuant to Section 3.4.5.

Avian and bat collision may occur within the substation area during the construction and/or operation of the Proposed Project. Substation construction and operation would require consultation with the CDFG and/or USFWS to ensure that this element of the Proposed Project would not jeopardize the continued existence of special status species. Any proposed fill, obstruction, diversion, and so forth of drainages within the substation would require a CDFG Streambed Alteration Agreement, and RWQCB 401 Permit to assure that activities do not result in a net loss of natural drainage courses in the region.

Alternative Jasper Substation 1B- Private Land

Environmental impacts are the same as the Substation Alternative 1A, see analysis above.

Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development, ROW Application Denied, and CUP Not Approved

Under this alternative, BLM would amend the CDCA Plan to determine that the site is suitable for wind energy development, but would deny the ROW application for the Proposed Project, and the County would not approve the CUP for the Proposed Project.

The site would remain in its present condition, which consists of vacant desert lands. Impacts to biological resources would not occur.

Alternative 3: Action on Amendment to CDCA Plan Determination Site Unsuitable for Wind Energy Development

Under this alternative, the Proposed Project site would be determined unsuitable for wind energy development. This unsuitability determination and its rationale would be reflected in an amendment to the CDCA Plan. Wind energy development projects would not be permitted on public lands within the Proposed Project area. Other (non-wind) renewable energy development would be subject to applicable NEPA compliance, and the planning process. The site would remain in its present condition, which consists of vacant desert lands, subject to the area's Multiple Use Class (MUC) provisions of the CDCA Plan. Under Alternative 3, no changes to vegetation, wildlife, or special aquatic resource areas would occur. Construction or operation would not occur; therefore, no effects are anticipated to any existing federal, state, or local areas with special management direction (i.e., BLM ACECs, West Mojave Plan).

Alternative 4: No Action on Site Suitability & Proposed Project

Under the No Action alternative, a determination of site suitability or authorization of the Proposed Project ROW would not occur, and the Granite Wind Project would not be constructed. The site would remain in its present condition and there would be no impacts to biological resources.

3.4.5 Avoidance, Minimization, and Mitigation Measures

The Proposed Project would implement recommended BLM PEIS BMPs, which were adopted as part of the proposed Wind Energy Development Program to ensure minimal impact to natural and cultural resources. In addition to the BLM BMPs, project specific mitigation measures evaluated for their ability to eliminate or reduce the potential substantial adverse impacts related to biological resources were developed for the Proposed Project.

Any potential direct or indirect effects on desert tortoise, their habitat or any other state or federally listed and/or ESA-protected plant or animal would be addressed through a separate consultation between BLM (the federal lead agency for the Proposed Project), CDFG and USFWS. Accordingly, the USFWS and CDFG may request that additional mitigation be identified as the result of the consultation and discretionary approval. If any conflicts between the following measures occur and a pending consultation is identified, the applicant shall implement the measures in the agency consultation.

BLM BEST MANAGEMENT PRACTICES

- Operators shall review existing information on species and habitats in the vicinity of the project area to identify potential concerns.

- Operators shall conduct surveys for Federal and/or State-protected species and other species of concern (including priority wildlife and special status plant and animal species) within the project area and design the project to avoid, minimize, or mitigate impacts to these resources.

- Operators shall identify important, sensitive, or unique habitats in the vicinity of the project and design the project to avoid, minimize, or mitigate impacts to these

habitats (e.g., locate the turbines, roads, and ancillary facilities in the least environmentally sensitive areas; i.e., away from riparian habitats, streams, wetlands, drainages, or critical wildlife habitats).

- The BLM will prohibit the disturbance of any population of federally listed plant species under the Endangered Species Act.

- Operators shall evaluate avian and bat use of the project area and design the project to minimize or mitigate the potential for bird and bat strikes (e.g., development shall not occur in riparian habitats and wetlands). Avian and bat use surveys consistent with current methodologies and standards shall be conducted; the amount and extent of ecological baseline data required shall be determined on a project basis.

- Turbines shall be configured to avoid landscape features known to attract raptors if site studies show that placing turbines there would pose a significant risk to raptors.

- Operators shall determine the presence of bat colonies and avoid placing turbines near known bat hibernation, breeding, and maternity/nursery colonies; in known migration corridors; or in known flight paths between colonies and feeding areas.

- Operators shall determine the presence of active raptor nests (i.e., raptor nests used during the breeding season) and design the project to provide for spatial buffers and timing restrictions for surface disturbing activities. Measures to reduce raptor use at a project site (e.g., minimize road cuts, maintain either no vegetation or plant species that are unattractive to raptors around the turbines) shall also be identified.

- A habitat restoration plan shall be developed to avoid, minimize, or mitigate negative impacts on vulnerable wildlife while maintaining or enhancing habitat values for other species. The plan shall identify reclamation, soil stabilization, and erosion reduction measures that shall be implemented to ensure that all temporary use areas are restored. The plan shall require that restoration occur as soon as possible after completion of activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats.

- Procedures shall be developed to mitigate potential impacts to special status species and other priority wildlife species. Such measures may include avoidance, relocation of project facilities or lay-down areas, and/or relocation of biota.

- Facilities shall be designed to discourage their use as perching or nesting substrates by birds. For example, power lines and poles shall be configured to minimize raptor electrocutions and discourage raptor and raven nesting and perching.

<u>Construction BMPs</u>

- Timing restrictions for construction activities may be implemented to minimize impacts to wildlife.

- In accordance with the habitat restoration plan, restoration shall be undertaken as soon as possible after completion of construction activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats.

- All construction employees shall be instructed to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship and nesting) seasons. In addition, pets shall not be permitted on site during construction.

- Operators shall develop a plan for control of noxious weeds and invasive species, which could occur as a result of new surface disturbance activities at the site. The plan shall address monitoring, education of personnel on weed identification, the manner in which weeds spread, and methods for treating infestations. The use of certified weed-free mulch and certified weed-free seed shall be required. If trucks and construction equipment are arriving from locations with known invasive vegetation problems, a controlled inspection and cleaning area shall be established to visually inspect construction equipment arriving at the project area and to remove and collect seeds that may be adhering to tires and other equipment surfaces.

- If pesticides are used on the site, an integrated pest management plan shall be developed to ensure that applications will be conducted within the framework of BLM and DOI policies and entail only the use of EPA-registered pesticides. Pesticide use shall be limited to non-persistent, immobile pesticides and shall only be applied in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications. Any applications of herbicides will be subject to BLM herbicide treatment standard operating procedures. Only herbicides on the list of approved herbicide formulations (updated annually) will be used on public lands.

Operation BMPs

- Employees, contractors, and site visitors shall be instructed to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship and nesting) seasons. In addition, any pets shall be controlled to avoid harassment and disturbance of wildlife.

- Observations of potential wildlife impacts, including wildlife mortality, shall be reported to the BLM authorized officer immediately.

PROJECT-SPECIFIC MITIGATION MEASURES

MMBIO1: An environmental education program shall be developed prior to Proposed Project construction and be implemented throughout the duration of Proposed Project operation. All employees and contractors working in the field shall be required to complete an environmental training session before beginning work. The program shall include discussions of the biology, distribution, and ecology of special status species within the geographic area of construction; protection afforded such species under applicable Federal and State laws and regulations; all protection measures that must be followed to protect such species during Proposed Project activities; penalties for noncompliance; reporting requirements; and the importance of compliance with all protection measures. To ensure proper focus, emphasis shall be placed on the specific aspects of compliance applicable to the particular audience's activities on the Proposed Project.

MMBIO2: To avoid attracting predators and nuisance species, the Proposed Project area shall be clear of debris, where possible. All food-related trash items shall be enclosed in sealed containers and regularly removed during Proposed Project construction and operation.

MMBIO3: An Environmental Inspector shall be hired and be responsible for overseeing the Proposed Project's environmental protection measures during construction and operation. At least one qualified biologist approved by BLM and USFWS, shall also be available and responsible for identification of habitat and individual special-status species as needed during construction and operation. The biologists shall, if needed, hold the required permits or MOUs with appropriate Federal and State agencies for the survey for or handling of any listed species. The Environmental Inspector shall be responsible for monitoring compliance with all avoidance and minimization measures.

MMBIO4: The Applicant shall attempt to clear Proposed Project areas of suitable avian nesting habitat during the non-breeding season (September 1 through January 31). This generally entails removing all shrubs and trees, burrows, and possibly tall grasses that would be removed as part of the Proposed Project from areas of the ROW during winter or early spring months.

The majority of vegetation clearing shall be conducted from September 1 through January 31 to avoid the breeding season of raptors and migratory birds; however, this period also coincides with the rainy season, which may make clearance activity in the desert difficult. If vegetation must be cleared during the breeding season, clearance surveys for nesting birds shall be conducted before each phase of Proposed Project construction if the activity must be conducted during the bird breeding season. Active nests shall be avoided and a buffer of 500 feet would be established around the active nest site. No construction activities shall take place within this buffer until the biologists confirms the nest is no longer active. Also, noise levels at the nest site must be kept at ambient levels or below 60 dB Leq hourly, whichever is greater. If sound levels cannot be maintained through redirecting noise sources (i.e., working in a different area) then noise insulation features shall be installed (i.e., hay bales, plywood walls, etc.). Such sound noise insulation features shall be installed between the sound source and the nest, but be at least 20 meters from the nest itself.

MMBIO5: Qualified biologists shall monitor all construction or operational activities where prior surveys have documented the occurrence of one or more special status species. In conjunction with the Environmental Inspector, the biologist shall have the authority to halt all non-emergency actions that might result in harm to a special status species, and shall assist in the overall implementation of protection measures for such species during Proposed Project operations. Emergencies are defined as situations or issues involving human health and safety.

MMBIO6: If a special status species is located during construction or operation, and a contingency for avoidance, removal, or transplant has not been approved by the appropriate agency, contractors and employees shall not proceed with the Proposed Project activity until specific consultation with the appropriate agency is completed and work continuance has been approved by the appropriate agency.

MMBIO7: All encounters with special status species shall be reported to the qualified biologist. The observer is responsible for providing the following information to the biologist, who shall record it:

Species name;

Location (narrative and maps) and dates of observations;

General condition and health, including injuries and state of healing; and

Diagnostic markings, including identification numbers or markers.

MMBIO8: Upon locating a dead or injured special status species, an authorized biologist shall be notified. The biologist would notify the appropriate agency. Verbal communication to the wildlife agencies shall take place as soon as possible, and written notification must be made within 15 business days of the date and time of the finding or incident (if known). The notification must include: Location of the carcass, a photograph, cause of death (if known), and other pertinent information such as corrective measures implemented to avoid future injury/death.

Upon locating a dead or injured desert tortoise, the operator is to notify the BLM within 15 business days. The BLM must then notify the appropriate Service field office of the incident within 15 business days. Desert tortoise remains shall be left in place (or just outside of the construction footprint or fenced area). Injured animals shall be transported to a qualified veterinarian by the authorized biologist for treatment at the expense of the Proposed Project proponent. If an injured animal recovers, the Service shall be contacted for final disposition of the animal.

MMBIO9: Compensation for the loss of Desert Tortoise habitat shall take place consistent with the requirements of the West Mojave Plan and as set forth by CDFG under their permitting process. This compensation shall be secured prior to the initiation of construction activity.

MMBIO10: The Applicant shall implement all Desert Tortoise protective measures set forth in the Draft Biological Assessment for the Proposed Project. These protective measures shall comprehensively minimize take of Desert Tortoise. If there are conflicts between measures proposed in this document and those in the Draft Biological Assessment, those found in the Draft Biological Assessment shall govern.

Construction Mitigation

MMBIO11: Prior to construction, environmentally sensitive areas (i.e., Joshua trees, aquatic resource areas, nests, etc.) that are to be protected in place and remain undisturbed during construction shall be staked, flagged, fenced, or otherwise conspicuously demarcated in the field.

MMBIO12: A pre-construction survey of each Proposed Project activity located within areas identified during surveys as special status species habitat (Appendix F) shall be conducted by an qualified biologist[10] no more than 7 days prior to the onset of activities.

MMBIO13: Prior to Proposed Project construction, a spring botanical survey shall be conducted to locate and map Mohave monkeyflower, Joshua trees, yucca and any other special status plant species with the potential to occur within the permanent and temporary impact areas. These locations shall be shown on construction design plans as avoidance

[10] For the purposes of this project, a qualified biologist is an individual who has sufficient education and field experience in California desert ecology, botany and biology to be able to identify local species, habitats and biological resources.

areas. To the extent possible, these resources shall be avoided. If these resources cannot be avoided, they shall be treated in accordance with the "Native Vegetation Restoration and Monitoring Plan" (MM Bio 3).

MMBIO14: Construction personnel shall be educated on the importance of controlling and preventing the spread of non-native species, with emphasis on invasive non-native plants.

MMBIO15: Prior to initiating Proposed Project construction activities (including clearing and grading), all equipment shall have tires, axles, frame, running boards, under carriages, and soil holding areas washed and cleaned to prevent nonnative invasive plant species transport to the Proposed Project area.

MMBIO16: Prior to the start of construction activities, a biological monitor shall inspect the construction work areas and look under all equipment to ensure that no desert tortoises are present. If a desert tortoise is observed within the construction area, no work shall commence within the immediate area (100 feet) of the tortoise until the animal has left voluntarily. If a tortoise needs to be relocated outside the construction area, it shall only occur pursuant to the terms and conditions of a separate Section 7 consultation with the USFWS.

MMBIO17: Within 30 days prior to ground-disturbing activities, a focused survey for burrowing owl shall be conducted. The survey should be conducted according to the recommended guidelines of the Burrowing Owl Consortium (1993) and in consultation with the CDFG. Occupied burrows should not be disturbed during the burrowing owl nesting season (February 1 through August 31) unless a qualified biologist verifies through noninvasive methods that either: (1) the owls have not begun egg laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently.

MMBIO18: Before any ground-disturbing activities (including equipment staging), confirmation of jurisdiction should be received from the USACE, RWQCB, and CDFG. If any of these agencies exert jurisdiction over the ephemeral drainages, appropriate permits shall be obtained and all conditions within the permits, including compensation requirements, shall be implemented.

MMBIO18a: Desert tortoises shall be handled only by the authorized biologist and only when necessary. All handling shall be in accordance with *Guidelines for Handling Desert Tortoises During Construction Projects (1999).*

MMBIO19: Proposed Project personnel shall exercise caution when commuting to the construction area to minimize any chance for the inadvertent injury or mortality of species encountered on major roads leading to and from the construction area. Contractors and employees shall report all such incidents directly to the Environmental Inspector.

MMBIO20: Designated open routes of travel and approved access roads shall be used to and from construction areas. Cross-country travel by vehicles and equipment shall be prohibited. Except on county or state-maintained roads, vehicle and equipment speeds shall not exceed 15 miles per hour within potential habitat of special status species.

MMBIO21: Construction activities between dusk and dawn shall be limited to the greatest extent feasible to minimize adverse impacts to biological resources.

MMBIO22: Open trenches, auger holes, or other excavations that could entrap wildlife shall be inspected by an authorized biologist a minimum of three times per day, and immediately prior to backfilling. In habitats supporting special-status species, underground conduit segments shall be capped or taped closed each night. Such segments shall be inspected regularly before sealing. For open trenches, earthen escape ramps shall be maintained at appropriate intervals. Other excavations that remain open overnight shall be covered or ramped to prevent entrapment of wildlife.

MMBIO23: All debris and loose construction materials and equipment shall be removed from the area upon completion of construction.

MMBIO24: At the conclusion of construction, all trenches and holes shall be completely filled, surfaces cleaned and smoothed, and each area re-contoured to match the original profiles as closely as possible.

MMBIO25: All stakes, flagging, and fencing used to delineate and protect any biological resource in the construction area shall be removed no later than 30 days after construction and restoration are complete.

MMBIO26: Monthly compliance reports shall be provided to the BLM during the construction phase of the Proposed Project. Within 90 days of completion of construction, a post-construction report shall be prepared and submitted to BLM. The report shall include photographs taken before, during, and after construction and a discussion of the Proposed Project's compliance with the biological mitigation measures in this DEIS/EIR.

MMBIO27: During final Proposed Project design and construction, the locations of poles, guy anchors, and trenches, shall be chosen to avoid (to the extent possible) impacts to special status species (i.e., Mohave monkeyflower, Joshua tree, yucca species, and Panamint cymopterus) known to occur or identified during the preconstruction botanical survey within the permanent and temporary impact area.

MMBIO28: To comply with the Fish and Game Code and San Bernardino County Code Section 88.01.050,a Plant Removal Permit shall be obtained prior to removal of any Joshua tree or yucca species within the Proposed Project area. All species of cacti (except chollia species) which may be impacted by construction activities shall be salvaged and transplanted in accordance with a Cactus Transplantation Plan developed by the applicant and approved by BLM.

MMBIO29: During construction, travel and equipment staging shall be restricted to designated access roads and work areas to minimize vegetation disturbance. The extent of these areas shall be shown on the construction plans and clearly demarcated in the field with stakes, flagging, or fencing. Any straying outside of the approved construction footprint shall be reported to BLM as soon as possible after occurrence.

MMBIO30: Vegetation removal shall be limited to the minimum area needed to construct the Proposed Project and shall be restricted in environmentally sensitive areas.

MMBIO31: The qualified biologist shall verify that gravel and/or fill material to be placed within relatively weed-free Proposed Project areas shall come from weed-free sources. Fill materials that originate from areas with known invasive vegetation problems should not be used.

MMBIO32: All areas of temporally disturbed soil shall be revegetated using native shrubs, grasses, and forbs.

MMBIO33: Where practicable and as needed, weed abatement efforts shall be targeted at populations of plants listed as invasive exotics by the California Exotic Plant Pest Council in their most recent A or Red Alert list. Pesticide use should be limited to non-persistent, immobile pesticides and should only be applied in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications.

MMBIO34: Construction within drainages shall occur only during the dry season or low-flow periods, or as detailed in approvals from the USACE, RWQCB, and CDFG. If any of these agencies exert jurisdiction over drainages, appropriate permits shall be obtained and all conditions within the permits, including compensation requirements, shall be implemented. The construction window within drainages may be extended based on seasonal conditions with approval from a qualified biologist and at the discretion of permitting agencies. If water is encountered during excavations in ephemeral drainages, flow shall be temporarily diverted around or, in the case of stagnant water, excluded from the work areas through the installation of cofferdams before construction. Any temporary cofferdams shall be immediately removed upon completion of construction activities in the area.

MMBIO35: Prior to Proposed Project construction, a spring botanical survey shall be conducted to locate and map Panamint cymopterus and any other plant species which support Ford's Indra swallowtail butterfly within the Proposed Project's permanent and temporary impact areas. These locations shall be shown on construction design plans as avoidance areas. To the extent possible, these resources shall be avoided. If these resources cannot be avoided, they shall be mitigated in accordance with the BLM's direction.

MMBIO36: In order to prevent adverse impacts to nearby wildlife, a noise monitoring and vibration plan would be developed and approved by the BLM prior to construction. The plan shall establish unique thresholds that would limit Project activities within close proximity to biological resources based on the following standards: Least Bell's vireo 60 dBA hourly L_{eq} noise threshold (SANDAG, 1988); 90 dBA hourly L_{eq} noise threshold for the desert tortoise (Brattstrom and Bondello, 1983); 95 dBA hourly L_{eq} noise threshold for the San Diego pocket mouse (Brattstrom and Bondello, 1983); and 111 VdB for vibration when adjacent to active desert tortoise and burrowing owl burrows (Bowles 2008).

Operation Mitigation

MMBIO37: A "Native Vegetation Restoration and Monitoring Plan" for temporarily disturbed areas within the Proposed Project area shall be developed and implemented that incorporates appropriate local native plant species. The plan shall be approved in concept by BLM prior to the initiation of any ground disturbing activities. The restoration and monitoring plan shall be implemented after construction activities have been completed.

MMBIO38: To reduce collisions of avian and bat species with turbines during Proposed Project operation, the number of wind turbines that require night lighting shall be minimized, using low-frequency strobe lights with a long dark interval and short flash-on time, in coordination with the FAA specifications.

MMBIO39: To reduce collisions of avian and bat species with appurtenant structures during Proposed Project operation, lighting shall be minimized to the extent feasible, in coordination with the FAA specifications using minimal intensity, directional, low-sodium lights or similar materials. Lighting at substations and operations and maintenance facilities shall be kept at the minimum required to meet safety and security needs and should be equipped with motion switches that shall keep lights off when not required. These lights shall be hooded and directed to minimize backscatter, reflection, skyward illumination, and illumination of areas outside of the facility or substation.

MMBIO40: Design and locate Proposed Project facilities to minimize avian and bat mortality during Proposed Project operation. The following measures shall be implemented, to the greatest extent feasible:

Avoid siting turbines on or immediately adjacent to the upwind sides of ridge crests.

Rocks unearthed during the excavation process shall be used during construction of foundations or hauled off site and disposed of properly. Rocks shall not be piled near turbines, which could provide wildlife habitat such as nesting sites for burrowing owls or cover for small mammals and reptiles, and could potentially attract raptors near the turbines.

Discourage small mammals and reptiles (prey base) from burrowing under or near turbine bases by minimizing the creation of berms or hillside cuts and by placing gravel at least 5 feet around each tower foundation.

If guy wires are necessary for any Proposed Project facilities, bird deterrents shall be used.

MMBIO41: Utility transmission lines shall be installed according to the 2006 Avian Power Line Interaction Committee Guidelines. The Proposed Project shall conform to the latest practices to protect birds from electrocution and collision. The Proposed Project shall install power collection and transmission facilities utilizing Avian Power Line Interaction Committee standards for collision-reducing techniques as outlined in “Mitigating Bird Collisions with Power Lines: The State of the Art in 2006.”

MMBIO42: Firearms and domestic pets shall be prohibited from Proposed Project work areas.

MMBIO43: Contractors and employees shall look under vehicles and equipment for the presence of special status species prior to movement. No equipment shall be moved until an animal has left voluntarily or it is removed by a biologist authorized to do so.

MMBIO44: Access roads and newly established utility and transmission line corridors should be monitored regularly during construction and Proposed Project operation for invasive plant species establishment, and weed control measures should be initiated immediately upon evidence of invasive species introduction as outlined in a BLM approved Weed Control Plan.

MMBIO45: All employees shall attend an annual refresher of the Environmental Awareness Training (MMBIO1) and such training shall be incorporated into the orientation of new employees.

MMBIO46: An annual report shall be submitted to the BLM discussing continued implementation of biological mitigation measures.

3.4.6 Summary of Project Environmental Impacts after Mitigation Measures are Implemented

With the implementation of avoidance, minimization, and mitigation measures identified in Section 3.4.5, potentially adverse impacts would be reduced as detailed throughout Appendix F's technical documents and impacts tables. Although this Project would result in the loss or conversion of native vegetation communities (TtEC January 2010, Permanent and Temporary Vegetation Impact Tables for Proposed Project Facilities), the disturbance is not considered substantial, because these habitats are common throughout the region. Additionally, special status plants species impacts would be avoided.

Avian and bat collision with turbines and other structures/facilities may occur in the Project area during the operation of the Project. However, construction and operation of the Project would require consultation with the CDFG and/or USFWS to ensure that the Project would not jeopardize the continued existence of special status species. Furthermore, any proposed fill, obstruction, diversion, and so forth of drainages within the Project area would require a CDFG Streambed Alteration Agreement, and RWQCB 401 Permit to assure that activities do not result in a net loss of natural drainage courses in the region.

Impacts on vegetation and habitat would not be substantial because construction activities would be controlled and the Project would not conflict with any habitat conservation plans. Impacts on wildlife would not be substantial , because there would not be substantial loss of wildlife from either construction or operation of the Proposed Project. Impacts on drainages and special status species would not be significant because potentially adverse impacts would be minimized with discretionary approvals and consultation with the CDFG, RWQCB, USFWS and CDFG.

3.5 NOISE

The analysis of potential noise impacts includes a description of the regulatory framework that guides the decision-making process, existing conditions of the Proposed Project area, anticipated impacts (direct, indirect, and cumulative), mitigation measures/BMPs, and summary of impacts after mitigation. The potential noise impacts are assessed based on the regulatory requirements of federal and state agencies and the County of San Bernardino.

3.5.1 Acoustical Analysis Background

Noise is defined as unwanted sound. Sound levels are measured on a logarithmic scale in decibels (dB). The most common descriptor of sound and noise associated with community noise measurements is the A-weighted sound pressure level (dBA-SPL). It is defined as the sound pressure level in decibels as measured on a sound meter using the A-weighting filter network. The A-weighted frequency filter de-emphasizes the very low and very high frequency components of sound in a manner similar to the frequency response of human hearing; dBA correlates well with human reactions to sound and environmental noise. All sound levels in this DEIS/EIR are A-weighted. Nearly all community noise metrics are expressed in units of dBA. A-weighted sound pressure levels of typical sources of noise are shown in Table 3.5-A. Vibration is measured in terms of VdB. The VdB is a logarithmic scaling of vibration magnitude.

The ambient sound level is the existing sound level resulting from natural and mechanical sources and human activity considered normally present in a particular area. The ambient noise level is composed of the cumulative sum of all noise sources, both near and far. The background noise level generally describes the mixture of indistinguishable sounds from many sources without any one dominating sound. It is the noise level that exists in the absence of identifiable, sporadic, individual noise events such as those caused by individual automobile pass-bys, aircraft overflights, intermittent dog barking, etc.

Humans are better able to perceive changes in noise level than absolute noise levels. Potential responses of persons to changes in the noise environment are usually assessed by evaluating differences between the existing and total predicted future noise environments. The following relationships of perception and response to quantifiable noise changes are used as a basis for assessing potential effects of these changes in environmental noise level:

- Except in a carefully controlled laboratory condition, a change of 1 dBA is very difficult to perceive.
- In the outside environment, a 3-dBA change is considered just perceptible.
- An increase of 5 dBA is considered readily perceptible and would generally result in a change in community response.
- A 10-dBA increase is perceived as a doubling in loudness and would likely result in a widespread community response.

Table 3.5-A: Sound Levels of Typical Noise Sources and Noise Environments

Noise Source (at a given distance)	Scale of dBA Sound Levels	Noise Environment	Human Judgment of Noise Loudness (Relative to a Reference Loudness of 70 dBs*)
Commercial Jet Take-off (200 ft)	120		Threshold of pain *32 times as loud
Pile Driver (50 ft)	110	Rock Music Concert	*16 times as loud
Ambulance Siren (100 ft) Newspaper Press (5 ft) Power Lawn Mower (3 ft)	100		Very loud *8 times as loud
Motorcycle (25 ft) Propeller Plane Flyover (1000 ft) Diesel Truck, 40 mph (50 ft)	90	Boiler Room Printing Press Plant	*4 times as loud
Garbage Disposal (3 ft)	80	High Urban Ambient Sound	*2 times as loud
Passenger Car, 65 mph (25 ft) Vacuum Cleaner (10 ft)	70		Moderately loud *70 decibels (Reference loudness)
Normal Conversation (5 ft) Air Conditioning Unit (100 ft)	60	Data Processing Center Department Store	*1/2 as loud
Light Traffic (100 ft)	50	Private Business Office	*1/4 as loud
Bird Calls (distant)	40	Lower Limit of Urban Ambient Sound	Quiet *1/8 as loud
Soft Whisper (5 ft)	30	Quiet Bedroom	
	20	Recording Studio	Very quiet
	10		
	0		Threshold of hearing

Source: Compiled by URS Corporation.

Because environmental noise varies with time, it is beneficial to define certain measurement terms that are used to characterize this fluctuating quantity. The energy-average level over a specific period is defined as the Equivalent Sound Level (L_{eq}). L_{eq} is the sound pressure level over a time interval that is equivalent to a perfectly constant sound pressure level containing the same acoustic energy as the variable level occurring over the same time interval. Thus, L_{eq} includes all sporadic or transient events occurring during the time period.

In addition to the L_{eq} metric, the statistical distribution of measured sound levels is used to describe the range of noise levels measured during a given period. This metric is presented as $L_{N,}$ which is the sound level exceeded N percent of the time during a given interval. For example, L_{10} (in dBA) is the sound level exceeded 10 percent of the time, and this level is commonly used to represent the upper range of noise levels of the measurement. L_{50} is the sound level that is exceeded 50 percent of the time and represents the median sound level. L_{90} is the sound level exceeded 90 percent of the time, and this level represents the background noise levels of the measurement. In terms of community noise, the County of San Bernardino uses the L_N metric to describe ambient noise level. The maximum A-weighted noise level recorded for a single event is defined as L_{max}.

Other descriptors of noise are also commonly used to identify noise/land use compatibility guidelines and assist in the prediction of community reaction to adverse effects of environmental noise, including traffic-generated and industrial noise. These descriptors include the Day-Night Noise Level (DNL, or L_{dn}); in California, the Community Noise

Equivalent Level (CNEL) descriptor is used. Each of these descriptors uses units of dBA. Both L_{dn} and CNEL noise metrics represent 24-hour periods, and both apply a time-weighted factor designed to penalize noise events that occur during evening or nighttime hours, when relaxation and sleep disturbance is of more concern. Both the L_{dn} and CNEL metrics add a 10 dBA penalty to the hourly L_{eq} noise levels from 10:00 p.m. to 7:00 a.m. (nighttime period). The CNEL metric additionally adds a 5-dBA penalty to the hourly L_{eq} noise levels from 7:00 p.m. to 10:00 p.m. (evening period). For CNEL, daytime is defined as the time between 7:00 a.m. and 7:00 p.m., and for L_{dn}, daytime is defined as the time between 7:00 a.m. and 10:00 p.m. The use of either the CNEL or L_{dn} noise metrics is mandated by state guideline for noise/land use compatibility planning purposes (State of California, General Plan Guidelines, November 1990); they are the predominant metrics used by local governments to describe noise environments within their jurisdictions.

3.5.2 Impact Criteria

Noise impact criteria found to be significant under CEQA are based on review of Appendix G of the CEQA Guidelines, local standards and regulations, and applicable significance criteria as adopted by the County. The noise impact criteria are also adequate for NEPA analysis.

Construction Noise Criteria

The following criteria are applicable to Proposed Project construction noise:

- Construction noise and vibration is exempt from 7:00 A.M. to 7:00 P.M. Monday through Saturday. (County of San Bernardino, CA, County Development Code Chapter 83.01.080 and 83.01.090.)
- Ground-borne vibration cannot exceed 75 VdB at any noise-sensitive residence (FTA, 2006).
- The project causes the ambient noise level measured at the property line of affected uses to increase by 3 dBA in CNEL to or within the “normally unacceptable” or “clearly unacceptable” noise/land use compatibility category.

Operational Noise Criteria

The following criteria are applicable to project operational noise:

- Nighttime noise levels, defined as between 10:00 P.M. to 7:00 A.M. for measurement purposes, in excess of 45 dBA L_{eq} at residential land uses, greater than 55 dBA L_{eq} at professional services, greater than 60 dBA L_{eq} at other commercial land uses, or greater than 70 dBA L_{eq} at industrial land uses.

3.5.3 Regulatory Setting

Federal Regulations

Office of Safety and Health Administration (OSHA)

There are no federal noise standards that directly regulate environmental noise related to the construction or operation of the Proposed Project. With regard to noise exposure and workers, the OSHA regulations specify exposure limits to safeguard the hearing of workers exposed to occupational noise.

Workers at the Project site could possibly be exposed to noise levels in excess of 85 dBA due to working in the proximity of the equipment. As such, they are subject to the noise standards established by OSHA. According to Code of Federal Regulations 29 CFR 1910.95:

> *1910.95(b)(1) When employees are subjected to sound levels exceeding those listed in Table G-16, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce sound levels within the levels of Table G-16, personal protective equipment shall be provided and used to reduce sound levels within the levels of the table.*

TABLE G-16 - PERMISSIBLE NOISE EXPOSURES (1)

Duration per day (hours)	Sound Level (dBA slow response)
8	90
6	92
4	95
3	97
2	100
1 1/2	102
1	105
1/2	110
1/4 or less	115

Footnote(1) When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions: C(1)/T(1) + C(2)/T(2) C(n)/T(n) exceeds unity, then the mixed exposure should be considered to exceed the limit value. Cn indicates the total time of exposure at a specified noise level, and Tn indicates the total time of exposure permitted at that level. Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

> *1910.95(c)(1) The employer shall administer a continuing, effective hearing conservation program whenever employee noise exposures equal or exceed an 8-hour time-weighted average sound level (TWA) of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of fifty percent. For purposes of the hearing conservation program, employee noise exposures shall be computed without regard to any attenuation provided by the use of personal protective equipment.*

State Regulations

The California Department of Health Services (CDHS)

The CDHS has studied the correlation of noise levels and their effects on various land uses and has established guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. The State of California requires that all municipalities prepare and adopt a comprehensive long-range General Plan. General Plans must contain a Noise Element (California Government Code Section 65302(f) and Section 46050.1 of the Health and Safety Code). The requirements for the Noise Element of the General Plan include describing the noise environment quantitatively using a cumulative noise metric such as CNEL or DNL, establishing noise/land use compatibility criteria, and establishing programs for achieving and/or maintaining land use compatibility. Noise elements shall address all major noise sources in the community, including mobile and stationary noise sources.

Occupational exposure to noise is regulated by Cal/OSHA in Title 8, Group 15, Article 105, Sections 5095-5100. The standard stipulates that protection against the effects of noise exposure shall be provided when sound levels exceed 90 dBA over an 8-hour exposure period. Protection shall consist of feasible administrative or engineering controls. If such controls fail to reduce sound levels to within acceptable levels, personal protective equipment shall be provided and used to reduce exposure of the employee. Additionally, a Hearing Conservation Program must be instituted by the employers whenever employee noise exposure equals or exceeds the Action Level of an 8-hour TWA sound level of 85 dBA. The Hearing Conservation Program requirements consist of periodic area and personal noise monitoring, performance and evaluation of audiograms, provision of hearing protection, annual employee training, and record keeping.

California Environmental Quality Act (CEQA)

CEQA (California Public Resources Code section 21000 et seq.) requires identification of significant environmental impacts and their feasible mitigation. Section XI of Appendix G of CEQA Guidelines (Cal. Code Regs., Title 14, App. G) lists some indicators of potentially significant impacts that include the following:

(a) Exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies,

(b) Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels,

(c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project,

(d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project,

(e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, the project exposes people residing or working in the project area to excessive noise level, and,

(f) For a project within the vicinity of a private airstrip, the project exposes people residing or working in the project area to excessive noise levels.

CEQA also has specific guidelines for the allowable increase in ambient noise due to project operational noise. The following thresholds of significance will be applied to the Proposed Project as set forth by CEQA guidelines, which state that a significant impact related to operational noise would result if:

(a) The project causes the ambient noise level measured at the property line of affected uses to increase by 3 dBA in CNEL to or within the “normally unacceptable” or “clearly unacceptable” noise/land use compatibility category; or

(b) The project causes any 5 dBA or greater noise increase.

Local Regulations

San Bernardino County General Plan

The Proposed Project is located in San Bernardino County, California. Nearby incorporated jurisdictions include the cities of Victorville and Barstow and the Town of Apple Valley. The Proposed Project would be located on private lands and on lands administered by BLM. All noise-sensitive receptors potentially impacted by the Proposed Project are located in unincorporated San Bernardino County.

San Bernardino County Code - Noise Ordinance

Each jurisdiction has its own unique standards regarding noise and nuisance. These standards are set out in County or municipal codes. Each noise ordinance within a municipal/county code will address noise levels that create a nuisance to surrounding communities. Noise ordinances typically classify different areas within these communities based on zoning standards. Such zones can include residential areas (analyzed further based on the density of the population), industrial areas, commercial areas, agricultural areas and rural areas, among many more. The possible adverse effects of construction noise are included in municipal noise ordinances.

Both construction noise and project noise are considered noise from stationary noise sources in the San Bernardino County Code, Chapter 83.01.080. Table 3.5-B represents the noise standards in San Bernardino County for stationary noise sources. Construction noise is temporary in nature, while project operational noise is not.

Table 3.5-B Noise Standards for Stationary Noise Sources

AFFECTED LAND USES (RECEIVING NOISE)	7A.M. - 10P.M. LEQ	10P.M. - 7A.M L_{EQ}
Residential	55 dB(A)	45 dB(A)
Professional Services	55 dB(A)	55 dB(A)
Other Commercial	60 dB(A)	60 dB(A)
Industrial	70 dB(A)	70 dB(A)

Source: County of San Bernardino, CA County Code, Chapter 83.01.080.

Ambient noise level, type of noise source, distance to the noise source, time of day, duration of the noise, and zoning of the areas in question are all considered when analyzing the adverse effects of noise on noise-sensitive receptors. Most municipal/county codes categorize noise by decibel levels that are A-weighted (dBA). Many standards will use a continuous noise equivalent level (L_{eq}) to express the sound levels over a given time period. The result of the measurement, expressed as L_{eq}, equals the same amount of energy of the fluctuating sound level over the entire time that a measurement was taken.

San Bernardino County's noise ordinance states that residential noise exposure should not exceed 55 dBA L_{eq} for more than 30 minutes (L_{50}) during any hour throughout daytime hours (7:00 a.m. to 10:00 p.m.) and no more than 45 dBA L_{eq} for 30 minutes (L_{50}) during any hour throughout nighttime hours (10:00 p.m. to 7:00 a.m. of the following day). Table 3.5-C shows the maximum time of exposure for increasing noise levels, when measured on another property. Construction noise is exempt from 7:00 a.m. to 7:00 p.m. Monday through Saturday. Construction noise is not exempt on Sundays and federal holidays. Impact noise or noise that consists of a single tone reduces the standard for both daytime and nighttime L_{eq} levels by 5 dBA.

Table 3.5-C: San Bernardino County Noise Standards – Noise Limit Category

EXTERIOR NOISE STANDARDS		NOISE LEVELS NOT TO BE EXCEEDED IN RESIDENTIAL ZONE**	
Maximum Time of Exposure	***Noise Metric***	***7 a.m. to 10 p.m. (daytime)***	***10 p.m. to 7 a.m. (nighttime)***
30 Minutes/Hour	L50	55 dBA	45 dBA
15 Minutes/Hour	L25	60 dBA	50 dBA
5 Minutes/Hour	L8.3	65 dBA	55 dBA
1 Minute/Hour	L1.7	70 dBA	60 dBA
Any Period of Time	Lmax	75 dBA	65 dBA

*Construction Noise Exemption Times: 7:00 a.m. - 7:00 p.m. Monday through Saturday
**5 dBA reduction for impact noise during non-exempt times
Source: County of San Bernardino, CA County Code, Chapter 87.0905.

3.5.4 Affected Environment

An ambient noise measurement survey was conducted in the vicinity of the Proposed Project site on June 24 and June 25, 2009 in order to accurately characterize and quantify the existing ambient noise conditions. The survey consisted of three long-term (LT) measurement locations and five short-term (ST) locations at nearby noise-sensitive receptors. The long-term ambient noise level measurements recorded data continuously for 24 hours. The short-term ambient noise level portion of the survey consisted of two 20-minute measurements at the respective noise-receptor locations. One 20-minute short-term measurement was conducted during daytime hours and the other 20-minute measurement was conducted during nighttime hours. **Figure 3.5-1** shows the ambient noise measurement locations in conjunction with the Proposed Project site.

All sound measuring instruments used for the survey used the dBA scale. A-weighting is used so that the instrument's response is similar to human hearing which is less sensitive to low and very high-pitched sounds. All field procedures were consistent with professional practice and the ANSI standard for measuring environmental noise (ANSI Section SI4-1979, Type 1).

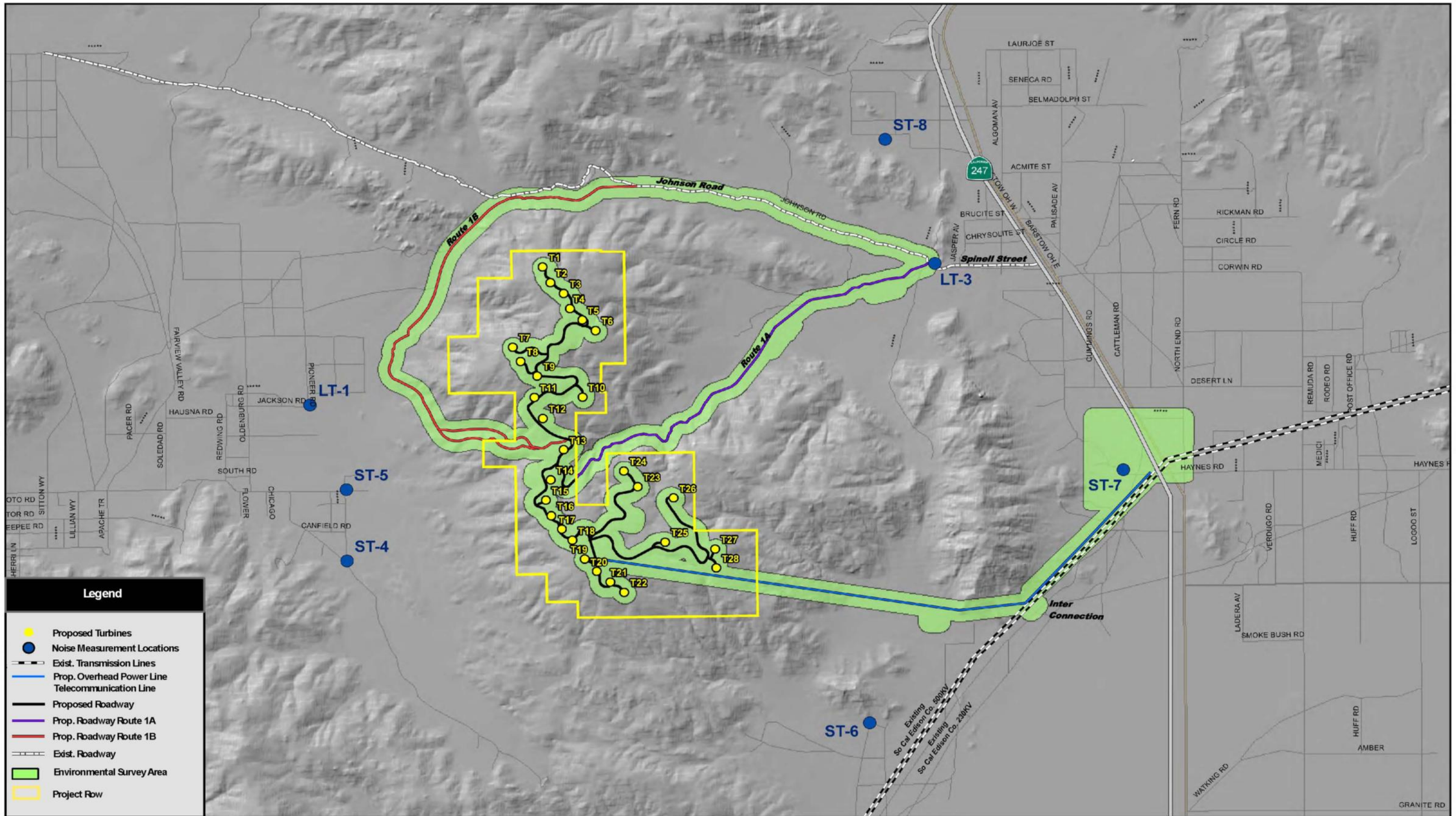
Long-Term Site Noise Monitoring

Table 3.6-D summarizes the data collected from the long-term measurement locations. Daytime hours are defined as the period from 7:00 a.m. to 10:00 p.m. and nighttime hours consist of the time from 10:00 p.m. to 7:00 a.m. of the following day. The data for each long-term measurement site is provided in Appendix B of the Noise Technical Report, which is provided as Appendix G to this DEIS/EIR.

The data indicate that daytime ambient noise levels at all locations are approximately 50 dBA L_{eq} and nighttime noise levels range from 32 dBA L_{eq} to 39 dBA L_{eq}. Refer to **Figure 3.5-1** for locations of all long-term noise-sensitive receptor measurement locations. The CNEL at LT-1 is 48.6 dBA. The CNEL at LT-2 and LT-3 is 50.2 dBA and 51.8 dBA, respectively. These ambient noise levels are characteristic of a homogenous rural environment. Predominant noise sources consist of distant vehicular traffic, occasional aircraft over-flights, and wildlife.

Table 3.5-D: Long-Term Measurement Site Data

Site ID	Location	Start Date	Start Time	Duration (hours)	Daytime Hourly L_{EQ} Range (dBA)	Daytime L_{EQ} (dBA)	Nighttime Hourly L_{EQ} Range (dBA)	Nighttime L_{EQ} (dBA)	CNEL (dBA)
LT-1	Jackson Rd.	6/24/09	13:00:00	24	30.6 - 56.9	49.5	22.9 - 37.8	32.4	48.8
LT-2	Baldridge Dr.	6/24/09	16:00:00	24	29.9 - 57.5	49.7	29.2 - 43.5	39.3	50.2
LT-3	Spinel St.	6/24/09	17:00:00	24	26.8 - 56.9	51.1	23.3 - 41.7	34.5	51.8



Sources: Southern California Edison, Granite Mountain Wind Energy Project Plan of Development 2009, BLM CDCA 1980.

GRANITE MOUNTAIN WIND ENERGY PROJECT
NOISE MEASUREMENT LOCATION

Figure 3.5-1

This page intentionally left blank.

Short-Term Site Noise Monitoring

Five short-term measurements were conducted during daytime and nighttime hours at nearby noise-sensitive residential receptor locations. Table 3.5-E summarizes the short-term measurement data. Each short-term measurement period was conducted for a period of 20 minutes.

These data indicate that daytime ambient noise levels range from approximately 28 dBA L_{eq} to 32 dBA L_{eq} at ST-4, ST-5, and ST-6. Refer to **Figure 3.5-1** for locations of all short-term noise-sensitive receptor measurement locations. Daytime ambient noise levels range from approximately 41 dBA L_{eq} to 45 dBA L_{eq} at ST-7 and ST-8. Higher daytime noise levels were measured at ST-7 and ST-8 due to traffic noise from SR 247 (Barstow Road).

Nighttime ambient noise levels ranged from 25.5 dBA L_{eq} to 37.7 dBA L_{eq}. Higher nighttime ambient noise levels were measured at ST-4 and ST-8. The nighttime L_{eq} of 36.5 dBA at ST-4 was caused by a nearby barking dog, and the nighttime L_{eq} of 37.7 dBA at ST-8 reflects nearby traffic noise from SR-247. Absent localized noise sources and nighttime ambient noise level measurement results are representative of ambient noise levels that can be expected throughout the Project vicinity. Predominant noise sources consist of distant vehicular traffic, occasional aircraft over-flights, and wildlife.

Table 3.5-E: Short-Term Measurement Site Data

SITE ID	LOCATION	DATE	PERIOD	START TIME (20 MIN. MEASUREMENTS)	L_{MIN} (DBA)	L_{MAX} (DBA)	L_{EQ} (DBA)
ST-4	Chicago Rd.	6/24/2009	Night	23:00:00	24.7	50.6	36.5
ST-4	Chicago Rd.	6/25/2009	Day	13:20:00	17.5	47.6	32.5
ST-5	Cahuilla Rd.	6/24/2009	Night	22:30:00	20.6	45.3	29.0
ST-5	Cahuilla Rd.	6/25/2009	Day	12:50:00	20.0	41.9	28.7
ST-6	Banta Rd.	6/25/2009	Night	2:10:00	18.2	43.4	25.5
ST-6	Banta Rd.	6/25/2009	Day	14:40:00	17.6	43.2	27.7
ST-7	Haynes Rd.	6/25/2009	Night	1:30:00	17.5	54.1	30.9
ST-7	Haynes Rd.	6/25/2009	Day	16:30:00	19.1	60.4	45.0
ST-8	Unnamed Road	6/25/2009	Night	1:00:00	16.6	55.7	37.7
ST-8	Unnamed Road	6/25/2009	Day	16:10:00	19.4	53.6	41.1

3.5.5 Environmental Consequences

ALTERNATIVE 1: PROPOSED PROJECT

Under this alternative, the Project site would be determined suitable for wind energy development. This suitability determination and its rationale would be reflected in an amendment to the CDCA Plan, and the development of the Proposed Project, including construction and operation of 28 WTG and ancillary facilities, would proceed.

Construction Noise

Construction activities would occur during daytime hours as defined by the County and would result in a temporary (10-month) increase in the ambient noise level in the vicinity of the Proposed Project. Noise would result from the operation of construction equipment, construction-related traffic, and blasting activities. The increased noise level would be primarily experienced close to the noise source (in the vicinity of the Project site). The

magnitude of the impact would depend on the type of construction activity, the noise level generated by various pieces of construction equipment, the duration of the construction phase, and the distance between the noise source and receiver. Construction activities are analyzed in six categories: road construction and maintenance, WTG foundation construction, WTG construction, Project substation construction, construction traffic, and blasting.

Due to soil types within the vicinity of the Proposed Project, blasting would be necessary during grading of the access route and WTG foundations. The specific type and location of blasting required for the Proposed Project have not been determined. The noise levels from blasting activities are affected by many variables, including the size of the explosive charge, relative timing of individual detonations, the amount of overburden that is covering the charges, and the time of day when the blast occurs.

Blasting noise is a single-event impact and consists largely of low frequency noise components. The human ear is less sensitive to low frequency noises than it is to high frequency noises, and the A-weighted noise scale, which has a frequency correction that correlates overall sound pressure levels with the frequency response of the human ear, weights the noise levels accordingly. San Bernardino County does not have noise-level criteria for evaluating noise impacts associated with blasting activities; however, blasting activities may disturb nearby sensitive receptors. Blasting would occur during road construction and WTG foundation construction and is analyzed separately in this section.

Road construction and maintenance, WTG foundation construction, and WTG construction were evaluated based on the cumulative worst-case scenario that could result if all construction equipment are used simultaneously. The equipment that would be utilized during road construction and maintenance are listed in Table 3.5-F. At 50 feet, the cumulative A-weighted sound pressure level is 92.4 dBA. Noise-sensitive receptors within 3,700 feet could potentially have noise levels of 55 dBA L_{eq}. Construction is only taking place during daytime hours and, therefore, per San Bernardino County Code, construction noise is exempt. With implementation of mitigation measures MMNOISE1 through 3, no substantial noise impacts will occur to human noise-sensitive receptors as a result of road construction and maintenance activities.

Table 3.5-F: Road Construction and Maintenance

NOISE SOURCE	SINGLE NOISE SOURCE DBA-SPL @ 50 FT	CUMULATIVE NOISE SOURCES DBA-SPL @ 50 FT
Excavator (2)	81.0	84.0
Grader (2)	85.0	88.0
Bulldozer (2)	82.0	85.0
Compactor (2)	78.0	81.0
Water Truck (2)	76.0	79.0
Belly Dump Truck (8)	76.0	85.0
Worst-Case Scenario (Cumulative dBA-SPL @ 50 ft.)	-	92.4
Distance at Which Cumulative Noise = 55 dBA-SPL	-	3,700 feet

Table 3.5-G lists the A-weighted sound pressure level for all construction equipment that would be utilized during the construction of the foundations for the 28 wind turbines. The same type of analysis is used for the construction of the foundations as was used for road construction and maintenance. The cumulative construction noise level is 92.4 dBA at a

distance of 50 feet. Using the formula that defines attenuation due to wave divergence, the cumulative construction noise levels from the construction of foundations would exceed 55 dBA if construction occurs within 2,800 feet of any noise-sensitive receptor. There are no human noise-sensitive receptors within 2,800 feet of the proposed WTG locations. Construction and its resulting noise levels are temporary and only take place during daytime hours and are, therefore, exempt from any local noise standards. With implementation of mitigation measures MMNOISE1 through 3, no substantial noise impacts would occur to human noise-sensitive receptors as a result of wind turbine foundation construction.

Table 3.5-G: Wind Turbine Foundation Construction Noise Levels

NOISE SOURCE	SINGLE NOISE SOURCE DBA-SPL @ 50 FT	CUMULATIVE NOISE SOURCES DBA-SPL @ 50 FT
Bobcat (1)	75.0	75.0
Excavator (2)	81.0	84.0
Crane (1)	81.0	81.0
Pick-Up Truck (4)	75.0	81.0
Concrete Truck (6)	79.0	86.8
Worst Case Scenario (Cumulative dBA-SPL @ 50 ft.)	-	90.1
Distance at Which Cumulative Noise = 55 dBA-SPL	-	2,800 feet

Table 3.5-H lists the A-weighted sound pressure levels for all construction equipment that would be utilized during the construction of the 28 wind turbine towers. The cumulative construction noise level is 86.4 dBA at a distance of 50 feet. Using the formula that defines attenuation due to wave divergence, the cumulative construction noise levels from the construction of the wind turbines would exceed 55 dBA if construction occurs within 1,800 feet of any noise-sensitive receptor. There are no human noise-sensitive receptors within 1,800 feet of the proposed WTG locations. Construction and its resulting noise levels are temporary and only take place during daytime hours and are, therefore, per San Bernardino County Code, construction noise is exempt. With implementation of mitigation measures MMNOISE1 through 3, no substantial noise impacts would occur to human noise-sensitive receptors as a result of wind turbine construction.

Table 3.5-H: Wind Turbine Construction Noise Levels

NOISE SOURCE	SINGLE NOISE SOURCE DBA-SPL @ 50 FT	CUMULATIVE NOISE SOURCES DBA-SPL @ 50 FT
Crane (3)	81.0	85.8
Manlift/Forklift (2)	75.0	78.0
Worst Case Scenario (Cumulative dBA-SPL @ 50 ft.)	-	86.4
Distance at Which Cumulative Noise = 55 dBA-SPL	-	1,800 feet

Typical noise levels associated with the construction of a Project substation and other similar structures are expected to be 89 dBA L_{eq} at a distance of 50 feet. Using the formula that defines attenuation due to wave divergence, the cumulative construction noise levels from Project substation construction would exceed the daytime standard L_{50} of 55 dBA if construction occurs within 8,000 feet of any noise-sensitive receptor.

There are two alternatives for the location of the Project substation. Construction and its resulting noise levels are temporary and only take place during daytime hours and are, therefore, exempt from any local noise standards. With implementation of mitigation measures MMNOISE1 through 3, no substantial noise impacts would occur to human noise-sensitive receptors as a result of Project substation construction.

There would be an increase in traffic due to construction. Table 3.5-I shows the anticipated average daily traffic (ADT) in the year 2011 without Project construction and reflects the increases in traffic due to construction. The table reflects the anticipated ADTs for locations that are located north and south of the Project site during project construction conditions in 2011. At Rabbit Spring Road, a change in ADT volume from 2,015 individual vehicles to 2,165 individual vehicles would result in an increase of 0.3 dBA. At Stoddard Wells Road, a change in ADT volume from 2,490 individual vehicles to 3,055 individual vehicles would result in an increase of 0.9 dBA.

The increase in traffic noise due to construction is less than 3 dBA, and since construction is temporary, it is exempt from noise standards as long as construction occurs during daytime hours. There are no significant noise impacts at human noise-sensitive receptors due to an increase of traffic as a result of Project construction.

Table 3.5-I: Average Daily Traffic Volume

			YEAR 2011 NO PROJECT CONDITIONS	YEAR 2011 PROJECT CONSTRUCTION CONDITIONS
ROADWAY	LOCATION	CLASSIFICATION	DAILY TRAFFIC (ADT) TOTAL	DAILY TRAFFIC (ADT) TOTAL
SR-247	North of Rabbit Spring Rd.	State Highway (2-Lane)	2,015	2,165
SR-247	South Stoddard Wells Rd.	State Highway (2-Lane)	2,490	3,055

Blast Noise

Blast noise at human receptors is also exempt from 7:00 a.m. to 7:00 p.m. Blasting takes place during this time and is exempt from the 75 dBA L_{eq} criterion. Noise from blasting is considered impulse noise. According to the San Bernardino noise standard, L_{eq} noise levels should be limited to 75 dBA and below. Based on data from previous URS projects, it is assumed that the sound power level from a single blast would be near 150 dBA L_w. The following assumptions are made regarding blasting activity:

- 150 dBA-L_w per blast
- One blast at the end of every other day for 6 months
- Blasting would occur at all 28 wind turbine locations
- Blasting would occur all along the chosen access road at locations where roadway does not currently exist.

Noise from blasting is considered an impulse noise. The Federal Transit Administration's recommendation of 0.2 in/sec PPV equates to 111 VdB. In San Bernardino County's vibration ordinance, it is stated that "no ground vibration shall be allowed which can be felt without the aid of instruments at or beyond the lot line." Ground-borne vibration can be perceived at 75 VdB. San Bernardino's standard for ground-borne vibration is more stringent and would, therefore, be followed. Since all construction for the Proposed Project

is temporary in nature, blast noise due to construction is exempt from the County standard. Therefore, with implementation of mitigation measure MMNOISE1, substantial noise or vibration impacts would be reduced at any of the potential human receptors due to blasting.

Operational Noise

The San Bernardino County Noise Ordinance adopted a nighttime L_{eq} threshold of 45 dBA at noise-sensitive residences. Table 3.5-J and Table 3.5-K display the results from the modeling conducted for Project operational noise from the wind turbines at the representative noise-sensitive receptors. Siemens SWT-2.3-101 80-meters-tall WTGs would be used for the Proposed Project. Wind conditions of 12 m/s are representative of maximum noise levels. A worst-case scenario (maximum noise levels and favorable propagation) was used for the sound power level. Table 3.5-J indicates the results with varying wind speeds from 4 m/s to 12 m/s at a northeast heading, and Table 3.5-K shows the results with varying wind speeds at a southwest heading.

Table 3.5-J: dBA-SPL at Noise-Sensitive Receptors with Varying Wind Speeds @ Northeast Heading

SITE ID	4 M/S	5 M/S	6 M/S	7 M/S	8 M/S	9 M/S	10 M/S	11 M/S	12 M/S
LT-1	43	44	43	43	43	44	44	44	44
LT-2	32	32	32	32	32	32	32	32	32
LT-3	21	21	21	21	21	21	21	21	21
ST-4	44	44	44	44	44	44	44	44	44
ST-5	45	45	45	45	45	44	44	44	44
ST-6	38	38	38	38	38	38	38	38	38
ST-7	14	13	13	13	13	13	13	13	13
ST-8	22	22	22	22	22	22	22	22	22

Table 3.5-K: dBA-SPL at Noise-Sensitive Receptors with Varying Wind Speeds @ Southwest Heading

SITE ID	4 M/S	5 M/S	6 M/S	7 M/S	8 M/S	9 M/S	10 M/S	11 M/S	12 M/S
LT-1	35	34	34	34	34	34	34	34	34
LT-2	20	20	20	20	20	20	20	20	20
LT-3	32	31	31	31	31	31	31	31	31
ST-4	33	33	33	33	33	33	33	33	33
ST-5	34	33	33	33	33	33	33	33	33
ST-6	32	32	32	32	35	35	35	36	37
ST-7	25	24	24	24	24	24	24	24	24
ST-8	33	33	33	33	33	33	33	33	33

For the cumulative operational noise, the ambient noise levels that were measured during nighttime hours are added to the Project operational noise levels. Table 3.5-L and 3.5-M show the cumulative noise results for varying wind speeds at both northeast and southwest headings.

Table 3.5-L: Cumulative Project Operational Noise Levels with Varying Wind Speeds @ Northeast Heading (dBA-SPL)

SITE ID	4 M/S	5 M/S	6 M/S	7 M/S	8 M/S	9 M/S	10 M/S	11 M/S	12 M/S
LT-1	44	44	44	44	44	44	44	44	44
LT-2	40	40	40	40	40	40	40	40	40
LT-3	35	35	35	35	35	35	35	35	35
ST-4	45	45	45	45	45	45	45	45	45
ST-5	45	45	45	45	45	45	45	45	45
ST-6	38	38	38	38	38	38	38	38	38
ST-7	31	31	31	31	31	31	31	31	31
ST-8	38	38	38	38	38	38	38	38	38

Table 3.5-M: Cumulative Project Operational Noise Levels with Varying Wind Speeds @ Southwest Heading (dBA-SPL)

SITE ID	4 M/S	5 M/S	6 M/S	7 M/S	8 M/S	9 M/S	10 M/S	11 M/S	12 M/S
LT-1	37	36	36	36	36	36	36	36	36
LT-2	39	39	39	39	39	39	39	39	39
LT-3	36	36	36	36	36	36	36	36	36
ST-4	38	38	38	38	38	38	38	38	38
ST-5	35	35	35	34	34	34	34	34	34
ST-6	33	33	33	33	36	36	36	36	37
ST-7	32	32	32	32	32	32	32	32	32
ST-8	39	39	39	39	39	39	39	39	39

At every noise-sensitive receptor, and for every wind condition, the noise levels do not exceed the San Bernardino County 45 dBA L_{eq} threshold. Therefore, based on the criteria related to regulatory limits, there are no significant noise impacts as a result of operational noise generated by the 28 WTGs.

Table 3.5-N shows the anticipated increases in traffic in 2011 resulting from Project operations. Increases of 16 total additional daily trips were assumed. In order to create a worst-case scenario, 16 individual vehicles were added to both locations found in Table 3.5-I. The increases in traffic volume from 2,015 to 2,031 vehicles and 2,490 to 2,506 vehicles would result in increases in CNEL that are less than 0.1 dBA.

There are no substantial noise impacts as a result of the increased traffic volume due to Project operations.

Table 3.5-N: Year 2011 Project Operational Conditions

ROADWAY	LOCATION	CLASSIFICATION	DAILY TRAFFIC (ADT) TOTAL
SR-247	North of Rabbit Spring Road	State Highway (2-Lane)	2,031
SR-247	South Stoddard Wells Road	State Highway (2-Lane)	2,506

Alternative Access Route 1A

The construction of Route 1A would generate an increase in noise levels. As seen in **Figure 3.5-1**, Route 1A is within 9,000 feet of LT-1. Table 3.5-O shows the potential noise effects from a single blast if Route 1A is used. At LT-3, Route 1A comes within 300 feet of the noise-sensitive receptor. If a blast occurs within 300 feet of any noise-sensitive receptor, it is likely that the sound pressure level would be approximately 100 dBA at the respective receptor. Based on the topography near LT-3, it is unlikely that a blast would occur nearby. Route 1A originates from Barstow Road and passes within 300 feet of LT-3 prior to diverging. Since Route 1A is less than 3,700 feet from LT-1 and less than 3,700 feet from LT-3, construction noise levels at LT-1 and LT-3 could potentially exceed 55 dBA; however, since construction is temporary, then all construction noise is exempt as long as construction takes place during daytime hours, per the San Bernardino County Noise Ordinance. With implementation of mitigation measures MMNOISE1 through 3, no substantial noise impacts would occur to human noise-sensitive receptors as a result of Route 1A construction.

Table 3.5-O: Blast Noise - Route 1A and Turbine Foundation Construction Noise Levels

SITE ID	DISTANCE TO BLAST (FEET)	SOUND PRESSURE LEVEL (DBA)
LT-1*	6,500	65.4
LT-2*	11,000	62.2
LT-3	X	X
ST-4*	8,500	65.0
ST-5*	7,700	66.0
ST-6*	9,000	64.4
ST-7	11,500	62.1
ST-8	6,000	68.5

*blast originating from foundation construction activities on top of mountain
"X" = blast within 300 feet of noise-sensitive receptor

Alternative Access Route 1B

As seen in **Figure 3.5-1**, Route 1B is within 1,600 feet of LT-1. Route 1B also originates from Barstow Road and passes within 300 feet of LT-3 prior to diverging. Table 3.5-P shows the potential noise effects from a single blast if proposed access road Route 1B is used. At LT-3, Route 1B comes within 300 feet of the noise-sensitive receptor. If a blast occurs within 300 feet of any noise-sensitive receptor, it is likely that the sound pressure level would be approximately 100 dBA at the respective receptor. Based on the topography near LT-3, it is unlikely that a blast would occur nearby. Since Route 1B is less than 3,700 feet from LT-1 and less than 3,700 feet from LT-3, construction noise levels at LT-1 and LT-3 could potentially exceed 55 dBA; however, since construction is temporary, then construction noise is exempt as long as construction takes place during daytime hours, per the San Bernardino County Noise Ordinance. With implementation of mitigation measures MMNOISE1 through 5, no substantial noise impacts would occur to human noise-sensitive receptors as a result of wind turbine construction. With implementation of mitigation measures MMNOISE1 through 3, no substantial noise impacts would occur to human noise-sensitive receptors as a result of Route1B construction.

Table 3.5-P: Blast Noise - Route 1B and Turbine Foundation Construction Noise Levels

SITE ID	DISTANCE TO BLAST (FEET)	SOUND PRESSURE LEVEL (DBA)
LT-1	1,600	89.2
LT-2*	11,000	62.2
LT-3	X	X
ST-4	8,000	76.8
ST-5	4,000	83.2
ST-6*	9,000	64.4
ST-7	11,500	62.1
ST-8	4,500	70.4

*blast originating from foundation construction activities on top of mountain
"X" = blast within 500 feet of noise-sensitive receptor

Alternative Jasper Substation 1A – Public Land

Substation 1A is more than 1,000 feet away from the nearest human noise-sensitive receptor. Operation noise includes noise from power transmission related to the substation and related transmission lines. Noise sources associated with power transmission include occasional breaker operation in the switchyard, corona noise, and very low magnetostriction hum from the conductors. Breaker noise is considered impulsive in nature, lasting a very short duration and may occur only a few times per year. Corona noise is characterized as a buzz or hum and is usually worse when the conductors are wet, such as in rain or fog.

The Electric Power Research Institute (EPRI) has conducted noise tests and studies and has published reference material on transmission line noise. Consistent with all acoustic textbooks' discussion of propagation of noise from a line source, EPRI states that noise produced by a conductor decreases at a rate of three decibels per doubling of distance from the source. The *EPRI Transmission Line Reference Book* (1987) indicates that the audible noise from a typical 220-kV line with two conductors per phase would likely be less than 40 dBA at a distance of 40 feet from the outside conductor at ground level. If only one conductor per phase is used, the noise level would be less. This level of noise is very likely to be inaudible with respect to existing levels of community noise.

No substantial impacts due to noise from substation 1A and associated power transmission lines are anticipated at this proposed location. Implementation of mitigation measures MMNOISE1 through 5 would reduce substantial construction impacts due to construction of the substation.

Alternative Jasper Substation 1B – Private Land

The proposed substation 1B at this location is also more than 1,000 feet away from the nearest human noise-sensitive receptor. As with the proposed substation 1A, minimal noise is anticipated from both the substation and related transmission lines. Therefore, no substantial impacts due to noise from the interconnect substation and associated power transmission lines are anticipated at this proposed location. Implementation of mitigation measures MMNOISE1 through 5 would reduce substantial construction impacts due to construction of the substations.

Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development, ROW Application Denied, and CUP Not Approved

Under this alternative, BLM would amend the CDCA Plan to determine that the site is suitable for wind energy development, but would deny the ROW application for the Proposed Project, and the County would not approve the CUP for the Proposed Project. The site would remain in its present condition consisting of vacant desert lands, and impacts from noise would not occur.

Alternative 3: Action on Amendment to CDCA Plan Determines Site Unsuitable for Wind Energy Development

Under this alternative, the Project site would be determined unsuitable for wind energy development. The site would remain in its present condition consisting of vacant desert lands; therefore, Alternative 2 would not have any noise impacts.

Alternative 4: No Action on Site Suitability and Proposed Project

Under this alternative, the Project site would not be developed with the proposed action and the Project site would remain in its present undeveloped condition. No determination on site suitability would be concluded. Impacts from noise would not occur.

3.5.6 Avoidance, Minimization, and/or Mitigation Measures

The Proposed Project would implement recommended BLM Wind PEIS BMPs, which were adopted as part of the proposed Wind Energy Development Program to ensure minimal impact to natural and cultural resources. In addition to the BLM BMPs, project-specific mitigation measures evaluated for their ability to eliminate or reduce the potential substantial adverse impacts related to geologic hazards were developed for the Proposed Project.

BLM BEST MANAGEMENT PRACTICES

- Proponents of a wind energy development project shall take measurements to assess the existing background noise levels at a given site and compare them to the anticipated noise levels associated with the Proposed Project.

Construction BMPs

- Noisy construction activities (including blasting) shall be limited to the least noise-sensitive times of day (i.e., daylight hours only or specified times) and weekdays.
- All equipment shall have sound-control devices no less effective than those provided on the original equipment. All construction equipment used shall be adequately muffled and maintained.
- All stationary construction equipment (i.e., compressors and generators) shall be located as far as practicable from nearby residences.
- If blasting or other noisy activities are required during the construction period, nearby residents shall be notified in advance.

PROJECT-SPECIFIC MITIGATION MEASURES

Construction Mitigation

MMNOISE1: The applicant shall limit construction activities to construction and vibration daytime hours as defined by the San Bernardino County Noise and Vibration Ordinance to avoid exceeding the County's standard limits.

MMNOISE2: During Project construction and prior to commencement of daily construction activities, the applicant or Project contractor shall inspect and verify that each piece of construction equipment, as appropriate, is fitted with efficient, well-maintained mufflers installed by the manufacturer that reduce equipment noise emissions to decrease noise emission levels from equipment and vehicles at the Project site.

MMNOISE3: The use of noise-producing signals, including horns, whistles, electronic alarms, and sirens and bells, will be for safety warning purposes only.

MMNOISE4: During final engineering, equipment would be selected and/or barriers would be installed to minimize noise levels at the closest sensitive receptors, as available and practicable.

MMNOISE5: Workers would be provided appropriate hearing protection, if necessary, as described in a Health and Safety Plan.

3.5.7 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented

With adherence to and implementation of the above-listed General Plan policies, above-listed mitigation measures, BMPs, as well as adherence to standard federal, state, and county regulations, the impact from construction and operation noise is not considered substantial.

3.6 CULTURAL RESOURCES

This section describes the cultural resources present in and around the Project area and describes potential direct and indirect impacts to these resources as a result of project implementation. The Proposed Project's Area of Potential Effect (APE) was identified in consultation with the County and BLM.

3.6.1 Impact Criteria

Federal and state criteria for assessing a project's impact (effect) on cultural resources are similar but not identical and are described below.

Federal Criteria

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to take into account the effects of their undertakings on historic properties, and the procedures in 36 CFR 800 define how federal agencies meet these responsibilities. 36 CFR 800.5(a) describes procedures for evaluating a project's adverse effects on cultural resources. An adverse effect is found when a federal undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion on the National Register of Historic Places (NRHP) in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Examples of adverse effects are provided in 36 CFR 800(a)(2) and include, but are not limited to:

- Physical destruction of or damage to all or part of the property;
- Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;
- Removal of the property from its historic location;
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
- Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- Transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

State Criteria

Under CEQA, a project may have a significant effect on the environment if it may cause "a substantial adverse change in the significance of an historical resource." (Pub. Resources Code, § 21084.1; Cal. Code Regs., tit. 14, § 15064.5, subd. [b].) If a site is either listed or eligible for listing in the California Register of Historic Resources (CRHR), or if it is included in a local register of historic resources, it is a "historical resource" and is presumed to be historically or culturally significant for the purposes of CEQA. (Pub. Resources Code, §

21084.1; Cal. Code Regs., tit. 14, § 15064.5, subd. [a].) A "substantial adverse change in the significance of an historical resource" reflecting a significant effect under CEQA means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired." (Cal. Code Regs., tit. 14, § 15064.5, subd. [b][1]; Pub. Resources Code, § 5020.1, subd. [q].) In turn, the significance of an historical resource is materially impaired when a project:

- Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the CRHR; or
- Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
- Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the CRHR as determined by a lead agency for purposes of CEQA.

3.6.2 Regulatory Settings

Federal Regulations

National Historic Preservation Act (NHPA) (36 CFR Part 60.4)

Section 106 of the NHPA (Title 16 U.S. Code, Sections 470w-6) requires federal agencies to take into account the effects of their undertakings (projects), licensed or executed by the agency, on historic properties listed or eligible for listing in the NRHP, and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings (16 U.S.C. 470f). The Section 106 process seeks to accommodate historic preservation concerns with the needs of federal undertakings through consultation among the Agency Official and other parties with an interest in the effects of the undertaking on historic properties, commencing at the early stages of project planning. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess its effects, and seek ways to avoid, minimize, or mitigate any adverse effects on historic properties. This investigation provides the information to evaluate the potential effects to cultural resources from each of the proposed alternatives. The Section 106 process includes the following steps:

- Identify and evaluate the NRHP eligibility of historic properties;
- Assess the effects of proposed action on any historic properties;
- Consult with the State Historic Preservation Officer (SHPO), interested parties, and when appropriate, the ACHP;
- Treat impacts, as necessary; and
- Proceed with the action.

Historic properties are defined as prehistoric and historic sites, buildings, structures, districts, and objects included in, or eligible for inclusion in the NRHP), as well as artifacts, records, and remains related to such properties (NHPA §301[5]). Traditional cultural resources are places or other resources that are significant to traditional cultural groups. Those that are eligible for the NRHP typically are important for their associations with cultural traditions or historically important members of traditional societies or embody characteristics of traditionally important artifacts or features. Code of Federal Regulations 36 CFR §800 stipulates that the SHPO must be consulted to determine the eligibility of an historic property for listing in the NRHP. Under 36 CFR §60.4, cultural resources may be eligible for nomination to the NRHP if these resources are:

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

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

(c) 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) Have yielded, or may be likely to yield, information important to prehistory or history.

National Environmental Policy Act of 1969 (NEPA)

NEPA requires federal agencies to consider impacts of their actions on the human environment, including the cultural environment, whether the action is funded or permitted by the agency.

Compliance with NEPA is guided by BLM Manual Section 1790 and Handbook H-1790-1. Environmental review is required for every Cultural Resource Project Plan (CRPP). Each existing germane NEPA document is identified and reviewed to determine if it can be used to satisfy NEPA requirements for the CRPP, or if a new document is needed. This must in all cases include examination of the EIS/EA for the regional land use plan and local plan, if any, under which the CRPP is being prepared. Environmental analysis (usually resulting in an environmental assessment tiered to the existing environmental documents) is completed as necessary to fully disclose projected impacts of the actions covered by the CRPP. Documentation of the results of the review and any subsequent environmental analysis is conducted as specified in H-1790-1.

Archeological Resources Protection Act of 1979 (ARPA)

ARPA was enacted "…to secure, for the present and future benefit of the American people, the protection of archaeological resources and sites which are on public lands and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals." The Act provides the requirements that must be met before federal authorities can issue a permit to excavate or remove any archeological resource on federal or Indian lands. The curation requirements of artifacts, other materials excavated or removed, and the records related to the artifacts and materials are also outlined.

American Indian Religious Freedom Act of 1978 (AIRFA)

The AIRFA (Title 42, U.S. Code, Section 1996) establishes policy of respect and protection of Native American religious practices. There are specific provisions for providing Native Americans access to religious sites.

Native American Graves Protection and Repatriation Act of 1990 (NAGPRA)

The NAGPRA requires federal agencies to consult with the appropriate Native American tribes prior to the intentional excavation of human remains and funerary objects. It requires the repatriation of human remains found on the agencies' land.

State Regulations

The County's permitting process requires compliance with CEQA (1970), as amended (PRC Section 21000 *et seq*.). This document was prepared in accordance with the requirements of CEQA, as amended, including the Guidelines for Implementation of CEQA (14 CCR Section 15000 *et seq*.), and is consistent with local County and City guidelines.

In considering impacts under CEQA, the significance of each resource must first be determined. At the state level, consideration of significance as an "important archaeological resource" is measured by cultural resource provisions considered under CEQA Sections 15064.5 and 15126.4 and the draft criteria regarding resource eligibility to the CRHR.

Generally, under CEQA an historical resource (these include the historic built-environment and historic and prehistoric archaeological resources) is considered significant if it meets the criteria for listing on the CRHR. These criteria are set forth in Section 15064.5 and defined as any resource that:

3. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
4. Is associated with lives of persons important in our past;
5. Embodies the distinctive characteristics of a type, period, region, or method of construction, or
6. Represents the work of an important creative individual or possesses high artistic values; or
7. Has yielded, or may be likely to yield, information important in prehistory or history.

Section 15064.5 of CEQA also assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. These procedures are detailed under PRC 5097.98.

Impacts to "unique archaeological resources" are also considered under CEQA, as described under PRC 21083.2. A unique archaeological resource implies an archaeological artifact, object, or site about which it can be clearly demonstrated that – without merely adding to the current body of knowledge – there is a high probability that it meets one of the following criterions:

- The archaeological artifact, object, or site contains information needed to answer important scientific questions and there is a demonstrable public interest in that information; or

- The archaeological artifact, object, or site has a special and particular quality, such as being the oldest of its type or the best available example of its type; or
- The archaeological artifact, object, or site is directly associated with a scientifically recognized important prehistoric or historic event or person.

A non-unique archaeological resource indicates an archaeological artifact, object, or site that does not meet the above criteria. Impacts to non-unique archaeological resources and resources that do not qualify for listing on the CRHR receive no further consideration under CEQA.

In many cases, determination of a resource's eligibility to the NRHP or CRHR can be made only through extensive research. Where possible, and to the maximum extent possible, impacts to resources should be avoided. If, it is impossible to avoid cultural resources, formal eligibility evaluation must be undertaken. If the resource meets the criteria of eligibility to the NRHP, it will be formally addressed under Section 106 of the NHPA. If the resource meets the criteria of eligibility to the CRHR, it will be formally addressed under Sections 15064.5 and 15126.4 of CEQA.

Under CEQA, a project potentially would have significant impacts if it would cause substantial adverse change in the significance of an historical resource (i.e., a cultural resource eligible for the CRHR or an archaeological resource defined as a unique archaeological resource that does not meet CRHR criteria) or would disturb human remains.

Local Regulations

San Bernardino County General Plan – Conservation Element

GOAL CO 3: The County will preserve and promote its historic and prehistoric cultural heritage.

- **POLICY CO 3.1:** Identify and protect important archaeological and historic cultural resources in areas of the County that have been determined to have known cultural resource sensitivity.
- **POLICY CO 3.2:** Identify and protect important archaeological and historic cultural resources in all lands that involves disturbance of previously undisturbed ground.
- **POLICY CO 3.3:** Establish programs to preserve the information and heritage value of cultural and historical resources.
- **POLICY CO 3.4:** The County will comply with Government Code Section 65352.2 (SB 18) by consulting with tribes as identified by the California Native American Heritage Commission on all General Plan and specific plan actions.
- **POLICY CO 3.5:** Ensure that important cultural resources are avoided or minimized to protect Native American beliefs and traditions.

GOAL D/CO 6: Protect cultural and paleontological resources within the desert region.

- **POLICY D/CO 6.1:** Identify and protect significant cultural resources from damage or destruction.
- **POLICY D/CO 6.2:** Inventory cultural resources, encouraging inputs from the local historical society and committees.

- **POLICY D/CO 6.3:** Prepare an historical/archeological overlay for community plan areas in developing land use designations and the formulation and evaluation of plan amendments and development proposals to provide a more systematic and streamlined approach.

3.6.3 Affected Environment

Cultural Setting

Prehistory

The following overview of the Mojave Desert cultural history is included to provide a framework for adaptive and archaeological patterns that might be encountered in the region of the Proposed Project. The information presented is organized chronologically and focuses on region-wide changes in human adaptation strategies over the past approximately 12,000 years of human occupation in the Mojave Desert.

The Pleistocene, 18,000 - 8,000 cal. B.C.

The period of human culture in North American commonly referred to as Paleoindian occurred from ca. 10,000 - 6,000 cal. B.C. (Martinez, et al., 2008), therefore spanning the Late Pleistocene and Early Holocene. The Clovis (ca. 10,000 - 8,000 cal. B.C.) is the only cultural complex that has been confidently dated to the late Pleistocene in the Mojave Desert (Sutton, et al., 2007).

Fluted points, the characteristic artifact of the Clovis complex, have been recovered from an increasing but rare number of locales. They have most often been found in surface contexts, making the exact chronological position of fluted point forms in the Mojave Desert less clear due to the lack of reliable carbon dates. Based on this sparse evidence, it can only be said that groups in the Mojave Desert at the terminal Pleistocene probably had relatively small populations, were highly mobile, and lived in small, temporary camps near permanent water sources (Sutton, et al., 2007:234).

The Early Holocene, 8,000 - 6,000 cal. B.C.

The first well-defined human occupation within the Mojave Desert occurred in the Early Holocene. The most coherent archaeological pattern known from that time is the Lake Mojave Complex, which was a regional expression of the Western Pluvial Lakes Tradition that was widespread in western North America.

Lake Mojave Complex sites were thought to have been associated with the shores of now-dry lakes, but current data now seems to suggest a pattern more consistent with that of generalized foragers, where human occupation was centered on rich resource patches in a variety of environmental situations (Bagsall & Hall, 1992; Basgall, 2004; Sutton, et al., 2007). Lake Mojave components have been reported that include extensive residential accumulations, workshops, and small camps. However, large sites appear to be manifestations of multiple occupation episodes rather than single, intensive ones (Bagsall & Hall, 1992).

Artifact assemblages of the Lake Mojave Complex include leaf-shaped lanceolate points, bifacial cutting tools, keeled or dome-shaped scrapers, crescentics, simple flake tools, and rare occurrences of ground stone (Bagsall & Hall, 1992; Bagsall, 2004; Brunzell, 2007).

The Middle Holocene, 6,000 - 3,000 cal. B.C.)

Environmental instability during the Middle Holocene may have fostered changes in subsistence and settlement strategies among the inhabitants of the Mojave Desert. During that time, the climate became generally warmer and drier with oscillating periods of drought and moister periods. Recent data may indicate that climatic stress varied region-to-region, such that conditions were not as inhospitable to human habitation as once thought (Sutton, et al., 2007). It has been thought that when harsher conditions arose, people adapted by moving out of the most inhospitable parts of the Mojave and formed settlements around oases at the edges of the desert, and from there, smaller groups would seasonally occupy the desert. However, current data seems to indicate that Middle Holocene sites occur in a diverse range of topographic and environmental zones; near remnant pluvial lake basins, ancient stream channels, and spring/seep locations, as well as in upland contexts (Bagsall, 2004). This may mean that people adapted to harsher conditions by adopting a more collector-like strategy with centralized site complexes from which logistical forays were staged into surrounding resource patches (Sutton et al., 2007).

The primary cultural complex of the Middle Holocene is the Pinto. Pinto Complex assemblages are marked by stemmed, indented-base points; however, in many ways, there appears to be broad continuity between the Lake Mojave and Pinto Complexes, leading researchers today to suspect that multiple culturally distinct populations may have occupied the Mojave Desert during this period (Sutton et al., 2007). Pinto Complex artifact assemblages also contain a greater incidence of groundstone implements, which may indicate a greater reliance on plant food resources.

Occupational Hiatus, ca. 3,000 - 2,000 cal. B.C.

Conditions at the end of the Middle Holocene became hotter and drier, which may have left large areas of the Mojave Desert uninhabitable. There are few sites that date ca. 3,000 - 2,000 cal. B.C. (Sutton, et al., 2007:241), which is thought to reflect very low population densities for roughly 1,000 years between the times associated with the Pinto and Gypsum Complexes. That apparent occupational hiatus may have actually extended further back in time, as most Pinto Complex sites date to before 4,500 cal. BC. (Sutton, et al., 2007).

The Late Holocene, ca. 2,000 cal. B.C. - A.D. 1,100

The earliest Late Holocene cultural complex is known as the Gypsum, marked by corner-notched (Elko series), concave base (Humboldt series), and well-shouldered contracting-stemmed (Gypsum series) projectile points. The Gypsum Complex is predominant between ca. 2,000 cal. B.C. and A.D. 200 (Sutton, et al., 2007:241) during a time of relatively cooler and wetter environmental conditions. Gypsum components tend to be smaller, more numerous, and spread across a more diverse array of locations than prior occupations. These changes in technology and settlement are coincident with possible indicators of increased social complexity, such as quartz crystals, paint, and rock art commonly attributed to ritual practices.

The Rose Springs Complex became dominant ca. A.D. 200 (Sutton, et al., 2007:241-242) and was a time of major cultural change among the inhabitants of the Mojave Desert. During that time, major population increases reached their peak, and the presence of architecture, such as pit houses and wikiups, suggest more intensive occupation. In addition, hunting technology changed with the diffusion of the bow and arrow into the area. The dominant artifacts of the Rose Springs Complex include smaller projectile points, stone

knives, drills, pipes, bone awls, various milling implements, marine shell ornaments, and large quantities of obsidian (Sutton, et al., 2007).

The Rose Springs Complex may have been brought to an end by a punctuated time of increasing aridity known as the Medieval Climatic Anomaly. During that time, few people remained in much of the Mojave Desert. Large villages declined and people aggregated to more compact settlement units to make more efficient use of diminishing resources due to environmental degradation (Sutton, et al., 2007).

The Late Prehistoric, ca. A.D. 1,100 to Contact

During Late Prehistoric times, the environment continued to deteriorate, populations declined further, and new technologies were introduced. A variety of types of occupation sites have been dated to this time, including a few major villages with associated cemeteries, special purpose, and seasonal sites. Artifact assemblages include Desert Series projectile points, buffware and brownware ceramics, shell and steatite beads, pendants, incised stones, and milling tools.

Ethnography

The project area is within the range of the Serrano group and possibly a more obscure subgroup of the Serrano, the Vanyume. The Serrano territory included the San Bernardino Mountains, east of Cajon Pass, as well as the desert area that lies immediately south of Victorville, extending east as far as Twenty-nine Palms and south as far as Yucaipa Valley. The Vanyume were found along the Mojave River near Apple Valley and possibly near or within the current project boundaries at the time of Spanish contact (Bean and Smith, 1978).

The Serrano were primarily hunters and gatherers organized into social groups called clans. Individual family dwellings were circular, domed structures that were constructed of willow frames and covered with tule thatch. Vegetal staples varied with village locality: acorns and piñon nuts in the foothills and mesquite, yucca roots, cacti fruits, and piñon nuts in or near the desert regions. Diets were supplemented with other roots, bulbs, shoots, and seeds (Bean and Smith, 1978:571). Deer, mountain sheep, antelope, rabbits, and other small rodents were among the principal animals hunted. Various game birds were also hunted, quail being the most important. The bow and arrow were used for large game, while smaller game and birds were killed with curved throwing sticks, traps, and snares. Occasionally game was hunted communally, especially during annual mourning ceremonies (Benedict, 1924; Drucker, 1937; Bean and Smith, 1978).

The manufactured goods of the Serrano included baskets, pottery, rabbit-skin blankets, awls, arrow straighteners, sinew-backed bows, arrows, fire drills, stone pipes, musical instruments (rattles, rasps, whistles, bull-roarers, and flutes), feathered costumes, mats, bags, storage pouches, and nets (Bean and Smith, 1978). Food acquisition and processing required the manufacture of additional items such as knives, stone or bone scrapers, pottery trays and bowls, bone or horn spoons, and stirrers. Mortars, made of either stone or wood, and metates were also manufactured (Strong, 1929; Drucker, 1937; Benedict, 1924).

Limited information is available on the Vanyume during the historic period. They can be described as a small subgroup of the Serrano living in the Mojave Desert to the north of Serrano territory. They were referred to by Kroeber as the, "Serrano of the Mojave River" (1953:614). The Vanyume spoke a Takic language related to the Kitanemuk to the west and the Serrano to the south. The population of the Vanyume was very small at the time of historic contact. Their "chief" reportedly lived in one of the villages at the upper reaches of the Mojave River near Victorville (Kroeber, 1953:615). The Vanyume generally practiced similar lifeways as those of the Serrano to the south. They were hunters and gatherers, and they were known to have used shell beads and millingstones.

History

The sporadic settlement of the Mojave Desert was prompted by its close proximity to Los Angeles as well as its valuable mineral deposits. It also served as a crossing point for people traveling west during the period of exploration and settlement. Since much of the Mojave Desert is uninhabitable in the hot summer months, the availability of water, typically supplied to the desert regions by shipment in tanks and barrels during historic times, was a critical factor in the settlement of the Mojave Desert.

Spanish Period

The Spanish period (1769-1821) represents a time of European exploration and settlement. Francisco Garcès, a Jesuit priest, accompanied Captain Juan Bautista de Anza on his trail-breaking expedition to find an overland route to transport goods, settlers, and missionaries from New Spain to coastal settlements in Alta California. On Anza's second expedition in 1775, he left Garcès at the Colorado River with instructions to explore the region and to familiarize himself with the local Indians. Taking a broad view of that mission, Garcès' explorations took him into the western Mojave, where he was the first European to encounter the Mojave River (Stickel & Weinman, 1980:118).

The Spanish continued to stage forays into the western Mojave in response to raids on mission grazing animals. In 1806, while on his way to assume an administrative post at Mission San Gabriel, Jose Marìa Zalvidea explored the western Mojave in an attempt to discover the source of recent raids. He visited the *rancheria* Atongai on the Mojave River near present-day Hesperia, approximately 15 miles west of the Project area. In 1810, it was reported that one Spanish corporal alone led 14 raids into the western Mojave (Stickel & Weinman, 1980:119). In 1819, Lt. Gabriel Moraga led 50 soldiers into the western Mojave to punish the Indians for a raid staged at the Mission San Buenaventura at the time of Passover. His diarists reports that their party traveled up the Mojave River and reached a point above the narrows near the present-day town of Victorville, approximately 20 miles west of the Project location.

Mexican Period

New Spain (present-day Mexico and California Territory) won independence from Spain in 1821. Following the Secularization Act of 1833 the missions were converted to parish churches and their vast land holdings were privatized via a series of substantial land grants. The new landowners focused primarily on cattle ranching. Despite native resistance, the new government reopened the De Anza trail, which accommodated tremendous traffic after the 1840s and inadvertently fostered disastrous impacts on indigenous people. The influx of non-native peoples between 1834 and 1848 contributed to the rise of diseases that decimated native populations (Martinez, et al., 2008).

American Period

The American period began in 1848; less than a year, later gold was discovered in the Northern California Sierra Nevada foothills. The great influx of Americans and Europeans that resulted quickly overwhelmed many of the Spanish and Mexican cultural traditions and eliminated many remaining vestiges of Native American Culture.

New Yorker Jedediah Strong Smith made two trips into California's desert region (Kyle, 1990). He first crossed the Mojave River in 1826, christening it the "Inconstant River," probably due to its intermittent, partially underground flow (Pierson, 1970). The route passed an Indian village on the Mojave Desert named Otangallavil, located near Hesperia (Pierson, 1970). In April 1844, while searching for the Old Spanish Trail, General Fremont also recorded the "clear, bold stream" of the Mojave River (Pierson, 1970). He heard it called the "Rio de las Animas" by the Spaniards, but on his map, he named it the "Mohave River" (Pierson, 1970).

The first trail in the region was established at an unknown (early) date by Indians and was referred to as the Old Indian Trail (Steele, 1975). By 1830, at least a portion of this trail was called the Old Spanish Trail, which was founded as a trade route for American goods shipped from Santa Fe and for Mexican horses and mules from Los Angeles (Latta, 1932). This trail extended from Santa Fe to Los Angeles across the Cajon Pass and represented a continuation of the Santa Fe Trail, which linked Mexican outposts in New Mexico and California. The Mojave River portion of the Old Indian Trail, located on the banks of the intermittent river, was also a landmark to the vast number of migrants across the desert. Construction of a railroad to link the San Joaquin Valley to Los Angeles across the Mojave took place in the 1870s, traversing the western edge of the desert.

Mining in the Mojave led to increased settlement during the latter half of the 19th century. The town of Mojave was the rail terminus for the 20-mule-team Borax wagons that operated from Death Valley between 1884 and 1889 (Kyle, 1990). The U.S. Borax and Chemical Company (formerly the Pacific Coast Borax Company) developed sodium borate mining at Boron, about 30 miles north of Victorville. Gold was discovered at Holcomb and Bear Valleys in 1860 (San Bernardino Public Library, 2009) and at Standard Hill (about 45 miles west of Victorville) in 1894. The nearby Cactus Queen Mine produced the largest quantity of silver ore in California until World War II (Kyle, 1990). All of this activity led to the formation of small towns and the development of agriculture in the Victorville vicinity. The town of Victorville was established in 1886 as a railway stop on the Santa Fe Railroad.

The military has played an important role in the modern history of the Mojave Desert. In 1933, Rogers Dry Lake (located between Barstow and Boron) was used as a gunnery and bombing range. In 1942, the first U.S. jet airplane was tested at Muroc Army Airfield, which became Muroc Air Force Base in 1948 and was renamed Edwards Air Force Base in 1981 (Kyle, 1990). George Air Force Base was initially founded as the Victorville Army Flight Training School in 1941, and with 10,000 trainees, it led to the rapid growth of the area surrounding Victorville. The base was decommissioned in 1992, and in 1994, the SCLA opened at the former base on 2,300 acres leased from the U.S. Air Force.

Apple Valley History

The discoveries of gold and silver in the nearby mountains brought large numbers of settlers to the region now known as Apple Valley on the western edge of the project area. Early settlement was met with some native resistance, the last battle of which was fought a few miles east of Apple Valley at a place called Chimney Rock (Apple Valley Chamber of Commerce, 2009).

Prior to the 20th century, cattle ranching was still the major industry in Apple Valley. The community was named in 1893 by Ursula M. Poates, who promoted the idea that the area had good conditions for growing apples. She began by planting several apple trees in her yard, and by 1910, settlers had 17 apple orchards covering 1,000 acres (Brunzell, 2007).

Federal land grants in the early 20th century encouraged homesteaders to occupy thousands of acres of land, but economic conditions at the beginning of World War I caused the decline of agriculture and homesteading in the area in favor of a return to mining and cattle ranching. Disease, bad weather, and competition from fruit growers in other parts of the country brought about the final demise of the Apple Valley orchards while lime and cement mining rose in economic importance in the region.

Lucerne Valley History

In July 1873, a consortium of five men laid claim to the springs now known as Rabbit Springs (approximately five miles southwest of the project area) and 100 surrounding acres. Peter Davidson, one of the first settlers in Lucerne Valley began operation of a way station at Rabbit Springs in 1884. Upon his death in 1906, he was buried at what is now the intersection of Kendall Road and Rabbit Springs Road.

The main industry in Lucerne Valley at the end of the 19th century was cattle ranching. In 1897, a settler named James Goulding started raising alfalfa. An alternative common name for alfalfa was Lucerne, so he named the area Lucerne Valley (Owen, 1988).

Summary of Research & Survey Results

A records search was performed at the San Bernardino Archaeological Information Center (SBAIC), which is the California Historical Resource Information System (CHRIS) repository of records of cultural resources within San Bernardino County. Inventories included: the NRHP, the CRHR, California Historical Landmarks, California Points of Historic Interest, the Historic Properties Data File, and others. The record search area included all areas within a one-mile radius of the Proposed Project area. As a result, no previously recorded cultural resources or studies were reported within the current project boundaries, and there are no reported historic built environment properties in the Proposed Project area. Four previously recorded prehistoric archaeological sites, one historic archaeological site, and four survey reports were reported within a one-mile radius of the Project location (see **Table 3.6-A:** *Recorded Prehistoric Archeological Sites within a One-Mile Radius of the Project Location*). Unfortunately, the records contain little information about these five sites.

Table 3.6-A: Recorded Prehistoric & Historic Archeological Sites within a One-Mile Radius of the Project Location

SITE #	DESCRIPTION FROM SITE RECORD
CA-SBR-2141	Scatter of artifacts around spring and throughout sheltering cave
CA-SBR-2143	Shelter caves
CA-SBR-2144	Shelter caves
CA-SBR-2145	Village site recorded by Smith & Sayles in 1940. Artifacts found were reported to include flakes, points, and metates.
CA-SBR-2337H	Fenced area enclosing about two acres, one cement foundation, fruit trees (dead), and conifers (dead)

Source: San Bernardino Museum, 2009.

The BLM has initiated consultation with the Native American community to identify any concerns regarding the Proposed Project. Any such concerns would be incorporated into the decision-making process.

A Class III Intensive Cultural Resource Survey of the Area of Potential Effect (APE) was conducted in all areas within the APE with less than 30% slope (URS, 2009). A direct APE was identified that included the entire Project area. Since there is no existing built environment within the Project area, a separate indirect APE was not developed for the Proposed Project. Overall, ground visibility throughout the APE was excellent, with all accessible areas having only sparse vegetation. Portions of the APE are characterized by relatively small terraces of flat land nestled among large rock outcrops.

As a result of the survey, 18 archaeological sites and 27 isolates were identified and recorded within the direct APE (Proposed Project area). The resources are described below and summarized in Table 3.6-B: *Archeological Sites Recorded* and Table 3.6-C *Archaeological Isolates Recorded.* The types of sites present, the apparent lack of subsurface remains, and, in some cases, the poor condition of the resource indicate that recordation has exhausted the data potential of these resources and none are recommended eligible for listing in the NRHP or the CRHR. No further archaeological investigation is recommended.

CA-SBR-13149H – Historic-era hearth approximately 12 inches in diameter and constructed from a barrel hoop and several granite rocks. Small amounts of charcoal were noted within the hearth. No other artifacts were observed.

CA-SBR13150H – Historic-era prospecting pit measuring approximately 12 feet by 12 feet and 3 feet deep with two adjacent piles of excavated granite rock and gravel. No artifacts were located.

CA-SBR-13151H – Rock cairn measuring approximately 32 inches tall by 45 inches in diameter at the base constructed of granite stones without mortar. Adjacent was a single course of stones forming a 36-inch by 54-inch letter “B” on the ground. No associated artifacts were located within or around the cairn.

CA-SBR-13152H – U.S. General Land Office cadastral survey marker and cairn consisting of a one-inch iron pipe extending vertically 26 inches high and capped with a circular brass marker stamped with section numbers and the date 1918. The pipe is set in a 3-foot by 3-foot rock cairn constructed of granite rocks without mortar. No artifacts were observed.

CA-SBR-13153H – U.S. General Land Office cadastral survey marker and cairn consisting of a one-inch iron pipe extending vertically 26 inches high and capped with a circular brass marker stamped with section numbers and the date 1918. The pipe is set in a 6-foot by 3-foot rock cairn constructed of granite rocks without mortar. One artifact, a piece of modern wooden lath, was identified.

CA-SBR-13154H – A rock ring and hearth (probably modern) consisting of a ring approximately 10 feet in diameter constructed from six rocks averaging 10 inches to 12 inches across with a single hearth measuring 36 inches in diameter is located approximately 12 feet to the south. Fire-affected rock was observed in the hearth, but no charcoal was present. No associated artifacts were observed. Though no evidence was observed that would allow determination of the age of the formation, the lack of any evidence of antiquity would seem to support a relatively recent date of construction. The individual stones that form the ring show no significant signs of weathering, no lichen or other growths, nor deep burial of the stones that would indicate that the stones had been in the current formation for any great period of time.

CA-SBR-13155H – Low-density scatter of five beverage cans opened with a ¾-inch church key and a single sanitary can. A “Lucky Lager” label was barely visible on one beverage can. All cans were badly rusted and crushed. Artifact types likely date post 1935-present (Rock, 1990).

CA-SBR-13156H – Two rock piles cairns, one measuring 8 feet by 5 feet by 1 foot in height and the other measuring 6 feet 4 inches by 5 feet by 10 inches in height. Cairns were expediently constructed from granite stones averaging approximately 12 inches in diameter. No artifacts were observed. Possibly modern era.

CA-SBR-13157H – Historic household trash dump consisting of approximately 130 rusted and highly decomposed cans, broken beverage bottles, stoneware crockery shards, barrel hoops, a wheel from a toy, and a toy rake. The debris seems to have been burned off-site and the dumped at its present location.

Some of the artifacts present at the site are temporally diagnostic because they are the products of manufacturing technologies or companies that had a limited known lifespan. The earliest of these were three hole-in-cap cans of a style that was manufactured sometime between 1903 and 1914. Another artifact, a medicine bottle, had a maker’s mark that began being used in 1929. From those artifacts, we can infer that the artifacts in CA-SBR-13157H represent a habitation period that lasted at least from 1914 to 1929 and that the episode of deposition occurred sometime thereafter. The site contains three distinct clusters of debris, indicating that multiple dumping events may have occurred over an unknown period of time.

Other non-temporally diagnostic artifacts present give some insight into the people who deposited the refuse. Present are dinner plate fragments, canning jar fragments, barrel hoops, and parts of toys. Represented are many aspects of day-to-day family life in a rural setting.

CA-SBR-13158H – Trash scatter consisting of 12 beverage cans (ca. 1950s) with large (¾-inch) church key openings and one fragment of a metal bed frame. The debris was found in a seasonal drainage; therefore, it is likely that all artifacts are in a secondary context.

CA-SBR-13159H – U.S. General Land Office cadastral survey marker and cairn consisting of a one-inch iron pipe extending vertically 26 inches high and capped with a circular brass marker stamped with section numbers and the date 1918. Approximately 2 feet south of the cadastral marker is a rock cairn measuring 4 feet by 4.5 feet by 2.5 feet high constructed of granite rocks in three courses without mortar. No other artifacts were noted.

CA-SBR-13160H – Rock ring and hearth (probably modern) consisting of a slightly ovoid ring 10 feet by 11 feet constructed from nine rocks averaging 10 to 12 inches across. A single hearth measuring 24 inches in diameter is located approximately 3 feet to the east. Though the smaller rock feature is slightly recessed and circular, thereby appearing to be a hearth, no fire-affected rock was observed in the hearth and no charcoal was present. No associated artifacts were observed. Though no evidence was observed that would allow determination of the age of the formation, the lack of any evidence of antiquity would seem to support a relatively recent date of construction. The individual stones that form the ring show no significant signs of weathering, no lichen or other growths, nor deep burial of the stones that would indicate that the stones had been in the current formation for any great period of time.

CA-SBR-13161H – Mining prospect pit with two hearths (probably modern). The prospect pit is roughly circular, measuring approximately six feet in diameter with an associated tailing pile measuring three feet tall. Approximately 75 feet to the south are two hearth features: one two feet in diameter and the other five feet in diameter and constructed from granite stones averaging 12 inches across in size. Partially burned modern lumber was noted in the larger hearth. All other artifacts located in the area are modern and likely associated with the use of various locations within the area as shooting ranges.

CA-SBR-13162H – A cluster of features and artifacts consisting of two adjacent rock rings (ca. 1920s to 1950s) that together measure approximately 10 feet by 7 feet by 18 inches high. Charcoal and fire-affected rock found in the rings would indicate that they were used as hearths. Approximately 10 feet north is a severely degraded flat area that may represent a remnant of a dirt driveway or parking spot. Examination of aerial photographs does not suggest this feature represents a formal road. Artifacts found at the site include beverage cans with large church key openings and one key-wind opened meat tin, which indicates the historic age of the site.

CA-SBR-13163H – A very low-density scatter of six beverage cans with large church key openings distributed over an area measuring approximately 200 feet by 250 feet. All of the cans are highly rusted and degraded. Large church keys came into use after 1935 (Rock, 1990).

CA-SBR-13164H – Historic-era trash scatter consisting of hole-in-top cans; yellow glazed stoneware crockery shards; shards of clear, green, and milk glass; tobacco tin; spice tins; and other household debris. The condition of the artifacts is generally poor, with all cans being highly rusted and degraded and all glass being highly fragmented.

Among the artifacts present at CA-SBR-13164H are temporally diagnostic cans, such as beverage cans opened with large (¾-inch) church keys that came into use after 1935,

indicating that the refuse was deposited sometime after that. Also present at the site were sanitary cans that could have been manufactured as early as 1904. In addition, the site contains two concentrations of refuse, indicating that it may be the result of multiple disposal episodes.

Notably absent from the site are artifacts that can be definitively associated with family life. Compared with CA-SBR-13157H, the artifact assemblage at CA-SBR-13164H is less rich and contains primarily food tins, tobacco tins, coffee tins, and artifacts likely associated with household maintenance, such as paint cans and a spool of copper wire.

Temp URS-1B – Open mining prospect pit with a dilapidated rough-hewn wooden shoring frame and a thick berm to the southeast. The pit contains a hole-in-top can and other modern trash, including plastic bottles, aluminum foil, cardboard, and modern cans. The pit measures 7 feet by 12 feet and is approximately 7 feet deep. The berm is approximately 3 feet high. An eroded ditch runs into the pit from the northeast.

Temp URS-2B – A historic well of unknown depth consisting of an uncapped 12-inch diameter pipe set vertically extending approximately 18 inches above ground. The well sits in a depression 6.5 feet in diameter and 20 inches deep. Modern trash is present.

This page intentionally left blank.

Table 3.6-B: Archaeological Sites Recorded

TRINOMIAL A	CRES A	REA	OVERALL SITE DENSITY	SITE CLASSIFICATION(S)	CULTURAL CONSTITUENTS	NTEGRITY	POTENTIAL FOR SUBSURFACE DEPOSITION	NRHP / CRHR RECOMMENDATION	MANAGEMENT RECOMMENDATION
CA-SBR-13149H	<0.01	28.1 ft2	0.036 / ft2	AH16 (Other)	Historic-era hearth. No artifacts were observed. I	Fair	None	Not Eligible	None
CA-SBR-13150H	0.01	587.2 ft2	0.002 / ft2	AH9 (Mine)	Historic-era prospecting pit. No artifacts were observed.	Good	None	Not Eligible	None
CA-SBR-13151H	<0.01	22.5 ft2	NA	AH16 (Other)	Rock cairn. No associated artifacts were located within or around the cairn.	Good	None	Not Eligible	None
CA-SBR-13152H	<0.01	9 ft2	NA	HP39 (Other)	U.S. General Land Office cadastral survey marker and rock cairn. No artifacts were observed.	Good	None	Not Eligible	Federal Survey Marker; Avoidance Required
CA-SBR-13153H	<0.01	9 ft2	NA	HP39 (Other)	U.S. General Land Office cadastral survey marker and rock cairn. One artifact, a piece of modern wooden lath, was identified.	Good	None	Not Eligible	Federal Survey Marker; Avoidance Required
CA-SBR-13154H	<0.01	420.7 ft2	NA	AH16 (Other)	A rock ring and hearth (probably modern). No other artifacts were observed.	Good	None	Not Eligible	None
CA-SBR-13155H	0.01	594.3 ft2	0.01 / ft2	AH4 (Privy or trash scatter)	Low-density scatter of five beverage cans (ca. 1950s).	Poor	None	Not Eligible	None
CA-SBR-13156H	<0.01	179.8 ft2	NA	AH16 (Other)	Two rock piles/cairns. No artifacts were observed within or around the cairns. Probably modern era.	Poor	None	Not Eligible	None
CA-SBR-13157H	<0.01	48.93 ft2	.007 / ft2	AH4 (Privy or trash scatter)	Historic household trash dump (ca. 1900s to 1920s).	Fair	None	Not Eligible	None
CA-SBR-13158H	0.30	13082.1 ft2	0.026 / ft2	AH4 (Privy or trash scatter)	Trash scatter consisting of twelve beverage cans (ca. 1950s).	Poor	None	Not Eligible	None
CA-SBR-13159H	<.01	9 ft2	NA	HP39 (Other)	U.S. General Land Office cadastral survey marker and rock cairn. No other artifacts were observed.	Good	None	Not Eligible	Federal Survey Marker; Avoidance Required
CA-SBR-13160H	<0.01	27.8 f ft2	NA	AH16 (Other)	Rock ring and hearth (probably modern).	Good	None	Not Eligible	None

TRINOMIAL A	CRES A	REA	OVERALL SITE DENSITY	SITE CLASSIFICATION(S)	CULTURAL CONSTITUENTS	NTEGRITY	POTENTIAL FOR SUBSURFACE DEPOSITION	NRHP / CRHR RECOMMENDATION	MANAGEMENT RECOMMENDATION
CA-SBR-13161H	0.17	7257.3 ft2	0.001 / ft2	AH9 (Mine) AH4 (Privy or trash scatter)	Mining prospect pit with two hearths (probably modern).		None	Not Eligible	None
CA-SBR-13162H	0.45	19540.5 ft2	<0.001 / ft^2	AH4 (Privy or trash scatter)	Two adjacent rock hearths, a possible remnant portion of a road, and a scatter of historic-era cans ca. 1920s to 1950s.	Poor	None	Not Eligible	None
CA-SBR-13163H	0.25	11045.8 ft2	<0.001 / ft^2	AH4 (Privy or trash scatter)	Scatter of six beverage cans (ca. 1950s).	Fair	None	Not Eligible	None
CA-SBR-13164H	1.55	67669.5 ft2	<0.001 / ft^2	AH4 (Privy or trash scatter)	Historic-era trash scatter (ca. 1900s to 1920s).	Fair	None	Not Eligible	None
Temp URS-1B	0.05	2069.9 ft2	NA	AH 9 (Mine)	Historic-era prospecting pit.	Poor	None	Not Eligible	None
Temp URS-2B	<0.01	235.7 ft2	NA	AH5 (Well or cistern)	Historic well (ca. post 1920).	Good	Low	Not Eligible	None

Table 3-6.C Archaeological Isolates Recorded

PRIMARY #	DESCRIPTION	COLLECTED?
36-014937	Beverage can 4 3/4” x 2 5/8” dia. with large church key opening	No
36-014938	Expediently constructed rock cairn measuring 18” across x 3 feet tall	No
36-014939	Beverage can 4 3/4” x 2 5/8” dia. with large church key opening	No
36-014940	Beverage can 4 3/4” x 2 5/8” dia. with large church key opening	No
36-014941	Beverage can 4 15/16” x 2 11/16” dia. with large church key opening	No
36-014942	Flake tool, utilized, translucent yellow brown crypto-crystalline silicate (CCS) material, measuring 3.1cm x 2.3cm x 0.3cm thick	No
36-014943	Beverage can with large church key opening	No
36-014944	Two sanitary cans and one hole-in-top milk can	No
36-014945	Beverage can 4 13/16” x 2 11/16” dia. with large church key opening	No
36-014946	Prehistoric secondary flake of white metavolcanic material. Measures 6.4cm x 4.2cm x 0.9cm	No
36-014947	Hole-in-top condensed milk can measuring 3 15/16” x 2 15/16” dia	No
36-014948	Formation of fire cracked rock, possible roasting pit	No
36-014949	Hole-in-cap meat tin with key wind opening measuring 2 4/16” x 4 5/16” diameter	No
36-014950	Two prehistoric flakes. One flake is brown grey chalcedony measuring 3.5cm x 2cm x 3mm thick. The other is red jasper material and measures 2cm x 1.3cm x 2mm thick.	No
36-014951	Fired 30mm shell casing with “56” stamped on base	No
36-014952	Beverage can 4½” x 2 11/16” dia. with large church key opening	No
36-014953	Two 2 7/8” x 3 5/8” beverage cans with large church key openings and two 3 1/8” x 4 1/2” sanitary cans	No
36-014954	Possible hearth consisting of a rock ring approx. 3 feet in diameter with fire-affected rock and small amounts of charcoal present. No artifacts noted.	No
36-014955	Flake tool, unifacially retouched, utilized, yellow jasper material, measuring 5.4cm x 2.9cm x 1.6cm	No
36-014956	Bifacial projectile point, distal fragment, black basalt material, possible archaic type, measuring 2.2cm x 1.8cm x 0.5cm	No
36-014957	Biface, possible projectile point, nearly complete, possible Dead Man Lake Complex type, measuring 5.3cm x 1.9cm x 0.4cm	Yes
36-014958	Biface, possible projectile point fragment, medial portion, fine-grained grayish tan material, 3.9cm x 2.5cm x 0.9cm	Yes
36-014959	Bifacial projectile point base, light grey chalcedony material, 3.3cm x 2.8cm x 0.8cm	Yes
36-014960	Beverage can with large church key opening measuring 4¾” x 2½” diameter	No
36-014961	Flake scatter, three flakes, extremely sparse, grey and white chalcedony	No
36-014962	Biface, possible projectile point, distal fragment, chalcedony material, measuring 3.3cm x 2.4cm x 0.5cm	Yes
Temp ISO-1A	Red chert bifacial thinning flake	No

3.6.4 Environmental Consequences

ALTERNATIVE 1: PROPOSED PROJECT

Disturbance of Known Cultural Resources

The Class III Intensive Cultural Resource Survey of the Proposed Project area identified 18 archaeological sites and 27 isolates that could be affected during construction and/or

operations. None are recommended eligible for listing on the NRHP or CRHR. Disturbance of these resources would be less-than significant impact in terms of state criteria, and there would be no effect in terms of federal criteria. Sites CA-SBR-13152H, CA-SBR-12153H, and CA-SBR-13159H are federal survey markers that require avoidance (MM CULT 1) as required by law. No built environment properties exist within the Proposed Project area, and none are known to occur within a one-mile radius. The visual impact analysis verifies that the Chimney Rock Historical Landmark and the Old Spanish National Historic Trail would not be affected (see Section 3.3). Thus, no direct or indirect impacts to historic resources listed on or eligible for listing on the NRHP or CRHR are expected.

Undiscovered Cultural Resources

Portions of the Project area have over 30 percent slope and, as such, were considered too hazardous to inventory. Though every effort was made to visually inspect these inaccessible areas at a distance, a low possibility remains that cultural resources such as rock art or small rock shelters could exist in those areas. In addition, areas of Aeolian and alluvial deposition are apparent in portions of the Project area within the valley floor. In such areas, the possibility remains that cultural resources could exist in regions that are sufficiently buried such that there was not surface evidence visible at the time of survey. As a result, without appropriate monitoring, construction activities could disturb or destroy such resources. Impacts according to state criteria would be less than significant with mitigation, and with mitigation, there would be no adverse effects according to federal criteria.

No impacts to undiscovered resources would be expected due to increased human activity on the site during operation.

Alternative Access Route 1A

According to the Cultural Resource Survey, two previously recorded sites and four newly recorded sites are located within Alternative Access Route 1A APE. Any potential impacts according to state or federal policies would be reduced or avoided with implementation of mitigation measures.

Alternative Access Route 1B

Six previously recorded sites and 14 newly recoded sites are located within Alternative Access Route 1B APE. None of these sites is considered eligible for listing on the NRHP or the CRHR. Located within Alternative Access Route 1B APE, site CA-SBR-13159H requires avoidance (MM CULT 1) as required by law. Any potential impacts according to state or federal criteria would be reduced or avoided with implementation of mitigation measures.

Alternative Jasper Substation 1A- Public Land

The Class III Intensive Cultural Resource Survey of the Alternative Interconnect Substation 1A APE identified 2 archaeological sites that could be affected during construction and/or operations. Neither is recommended eligible for listing on the NRHP or CRHR. Disturbance of these resources would be a less-than-significant impact under state criteria, and there would be no effect under federal criteria. However, Project-specific mitigation measures are provided to further ensure no effects would occur.

Alternative Jasper Substation 1B- Private Land

The Class III Intensive Cultural Resource Survey of Alternative Interconnect Substation 1B APE identified no archaeological sites and 1 isolate that could be affected during

construction and/or operations. It is not recommended eligible for listing on the NRHP or CRHR. Disturbance of these resources would be a less-than-significant impact under state criteria, and there would be no effect under federal criteria.

Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development, ROW Application Denied, and CUP Not Approved

Under this alternative, BLM would amend the CDCA Plan to determine that the site is suitable for wind energy development, but would deny the ROW application for the Proposed Project, and the County would not approve the CUP for the Proposed Project. The site would remain in its present condition consisting of vacant desert lands, and impacts to cultural resources would not occur.

Alternative 3: Action on Amendment to CDCA Plan Determines Site Unsuitable for Wind Energy Development

Wind energy development would not be allowed under Alternative 3, and current conditions would not change. BLM public lands and San Bernardino private lands would continue to be vacant and undisturbed until such time as a permitted use or subsequent amendment to the CDCA Plan is approved. Alternative 3 would have no effect on cultural resources.

Alternative 4: No Action on Site Suitability and Proposed Project

Under the No Action Alternative, BLM public lands and San Bernardino private lands would continue to be vacant and undisturbed. There would be no change to current conditions. Alternative 4 would have no effect on cultural resources.

3.6.5 Avoidance, Minimization, and/or Mitigation Measures

The Proposed Project would implement recommended BLM Wind PEIS BMPs, which were adopted as part of the proposed Wind Energy Development Program to ensure minimal impact to natural and cultural resources. In addition to the BLM BMPs, Project-specific mitigation measures evaluated for their ability to eliminate or reduce the potential substantial adverse impacts related to cultural resources were developed for the Proposed Project.

BLM BEST MANAGEMENT PRACTICES

- The BLM will consult with Indian Tribal governments early in the planning process to identify issues regarding the proposed wind energy development, including issues related to the presence of cultural properties, access rights, disruption to traditional cultural practices, and impacts to visual resources important to the Tribe(s).
- The presence of archaeological sites and historic properties in the area of potential effect shall be determined on the basis of a records search of recorded sites and properties in the area and/or, depending on the extent and reliability of existing information, an archaeological survey. Archaeological sites and historic properties present in the area of potential effect shall be reviewed to determine whether they meet the criteria of eligibility for listing on the NRHP.
- When any right-of-way application includes remnants of a National Historic Trail, is located within the viewshed of a National Historic Trail's designated centerline, or includes or is within the viewshed of a trail eligible for listing on the NRHP, the operator shall evaluate the potential visual impacts to the trail associated with the

proposed project and identify appropriate mitigation measures for inclusion as stipulations in the POD.

- If cultural resources are present at the site, or if areas with a high potential to contain cultural material have been identified, a Cultural Resources Management Plan (CRMP) shall be developed. This plan shall address mitigation activities to be taken for cultural resources found at the site. Avoidance of the area is always the preferred mitigation option. Other mitigation options include archaeological survey and excavation (as warranted) and monitoring. If an area exhibits a high potential, but no artifacts were observed during an archaeological survey, monitoring by a qualified archaeologist could be required during all excavation and earthmoving in the high-potential area. A report shall be prepared documenting these activities. The CRMP also shall (1) establish a monitoring program, (2) identify measures to prevent potential looting/vandalism or erosion impacts, and (3) address the education of workers and the public to make them aware of the consequences of unauthorized collection of artifacts and destruction of property on public land.

Construction BMPs

- Unexpected discovery of cultural resources during construction shall be brought to the attention of the responsible BLM authorized officer immediately. Work shall be halted in the vicinity of the find to avoid further disturbance to the resources while they are being evaluated and appropriate mitigation measures are being developed.

PROJECT-SPECIFIC MITIGATION MEASURES

Construction Mitigation

MMCUL1: Sites CA-SBR-13152H, CA-SBR-13153 H, and CA-SBR-13159 H are U.S. General Land Office cadastral survey markers. They should be avoided in order to comply with Section 57 of the Criminal Code of 1909 (Ch. 645, 62 Stat. 789; 18 U.S.C. 1858) that prohibits destroying or tampering with federal survey markers.

MMCUL2: In the event that buried cultural resources are discovered during Project construction, operations shall cease in the immediate vicinity of the find and a qualified archaeologist shall be consulted to determine whether the resource requires further study. The archeologist shall make recommendations to the BLM on measures that shall be implemented to protect the discovered resources, including, but not limited to, avoidance, further evaluation, data recovery, or other documentation.

MMCUL3: Prior to the issuance of a grading permit, an Archaeological Resource Monitoring Plan shall be developed by a qualified archaeologist and submitted to the BLM and County for review and approval. This plan shall include a grading observation schedule to be maintained when grading occurs on-site in upper soils to identify and further evaluate cultural resources that may be discovered in the Proposed Project area. A qualified archaeologist shall be retained to attend pre-grade meetings and to monitor earth-moving activities, including clearing, grubbing, cutting, and trenching at the Project site. The archaeologist shall carefully inspect these areas to assess the potential for significant prehistoric or historic remains. If potential archaeological and historical resources are uncovered, the construction contractor shall cease grading operations in the vicinity of the find until further evaluation is undertaken to assess the discovery. Further subsurface investigation may be needed if the resource is determined unique or important for its prehistoric or historic information.

MMCUL4: While the presence of human remains in the Proposed Project area is highly unlikely, a potential still exists for unanticipated human burials or cremations to occur. If human remains are encountered on-site, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or his/her authorized representative, on private land, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 48 hours of notification by the NAHC. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials. State CEQA Guidelines Section 15064.5 shall also apply if human remains are found to determine the significance of impacts on historical and unique archaeological resources. With regard to human remains discovered on federal lands (BLM), protocols set forth by the National Graves and Repatriation Act (NAGRPA) must be followed by BLM. The BLM will comply with all NAGPRA protocols regarding excavation and inadvertent discoveries of human remains.

3.6.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented

With adherence to and implementation of the above-listed General Plan policies, above-listed mitigation measures, as well as adherence to standard federal, state, and county regulations, the impacts to cultural resources are considered to be less than significant under state criteria and non-adverse under federal criteria.

This page intentionally left blank.

3.7 GEOLOGY, SEISMICITY, AND SOIL RESOURCES

This section summarizes the regulatory and environmental settings, the methodology, and the environmental consequences of the Project alternatives. Geologic, soil conditions, and geologic hazards studies performed in the Project area were central to answering these questions to assess the potential impacts associated with the Project area. The following sections summarize the general geological condition in the Project area.

3.7.1 Impact Criteria

The potential risk of direct and indirect impacts affecting geology and soil resources is assessed with respect to nine criterions. Potential impacts to geology and soil resources could occur if reasonably foreseeable future actions were to result in any of the following:

- Were located on or near the trace of a known active fault or an area characterized by surface rupture that might be related to a fault;
- Were to increase the potential for human injury or economic loss from earthquakes, liquefaction, slope failure, or other geologic hazards;
- Were to damage or degrade an important geologic feature or landmark;
- Resulted in substantial soil erosion or loss of topsoil;
- Was located on unstable strata or soil or that would become unstable as a result of the project, potentially resulting in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
- Was located on expansive soil creating substantial risks to life or property;
- Soil removal or loss of topsoil could affect potential farmland, erosion patterns, or habitats;
- Increased runoff due to development of roads and structures could lead to more soil erosion; or
- Potential expansive soils, as defined in Table 18-1B of the Uniform Building Code (2008), could create substantial risks to life or property.

3.7.2 Regulatory Settings

Federal Regulations

National Pollution Discharge Elimination System (NPDES)

A Storm Water Pollution Prevention Plan (SWPPP) must be prepared pursuant to the State Water Resources Control Board, Water Quality Order No. 99-08-DWQ, NPDES, General Permit No. CAS000002 *Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity (General Permit)*. Under this order, a SWPPP is to be developed and implemented for each construction site covered by the NPDES General Construction Permit. The SWPPP was developed to meet the following objectives:

- Identify all pollutant sources that may affect the quality of discharges of stormwater associated with construction activity (stormwater discharges) from the construction site;
- Identify non-stormwater discharges;

- Identify, construct, implement, and maintain BMPs to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the construction site during construction;

- Develop a maintenance schedule for BMPs installed during construction designed to reduce or eliminate pollutants after construction is completed (post-construction BMPs);

- Identify a sampling and analysis strategy and sampling schedule for discharges from construction activity that discharge directly to a water body listed for impairment due to sedimentation, in accordance with Section 303(d) of the Clean Water Act; and

- Identify a sampling and analysis strategy and sampling schedule for discharges that have been discovered through visual monitoring to be potentially contaminated by pollutants not visually detectable in the runoff.

The Proposed Project would be required by the County of San Bernardino Building and Safety Division to prepare a SWPPP prior to grading permits.

State Regulations

The California Geological Survey (CGS) provides guidance with regard to seismic hazards. Under the CGS Seismic Hazards Mapping Act, seismic hazard zones are identified and mapped to assist local governments in land use planning. The intent of this Act is to protect the public from the effects of strong ground shaking, liquefaction, landslides, ground failure, or other hazards caused by earthquakes. In addition, CGS Special Publication 117, Guidelines for Evaluating and Mitigating Seismic Hazards in California, provides guidance for the evaluation and mitigation of earthquake-related hazards for projects within designated zones of required investigations.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. Its main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. This state law was a direct result of the 1971 San Fernando Earthquake, which was associated with extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures.

Historic Sites Act of 1935

The Historic Sites Act of 1935 establishes a national registry of natural landmarks and protects “outstanding examples of major geological features.” Topographic and geologic features discussed under CEQA documents are protected by the Historic Sites Act of 1935.

UBC—Uniform Building Code

The Uniform Building Code (UBC) was first enacted in 1927 and assists builders in the development of better building construction and provides greater safety to the public by establishing uniformity in building laws. The UBC covers fire, life, and structural safety aspects of all buildings and related structures. Revised editions are published generally every three years (ICBO, 1985).

Local Regulations

San Bernardino County General Plan - Safety Element

GOAL S 4: The County will minimize damage due to wind and water erosion where possible.

- **POLICY S 4.2:** Apply the provisions of the Revised Erosion and Sediment Control Ordinance countywide.
- **POLICY S 4.3:** Tailor grading, land clearance, and grazing to prevent unnatural erosion in erosion susceptible areas.

GOAL S 6: The County will protect residents from natural and manmade hazards.

- **POLICY S 6.1:** Require development on hillsides to be sited in such a manner that minimizes the extent of topographic alteration required to minimize erosion, to maintain slope stability, and to reduce the potential for offsite sediment transport.
- **POLICY S 6.2:** Utilize the Hazard and Resources Overlay Maps to identify areas suitable or required for retention as open space. Resources and issues identified on the Overlays which indicate open space as an appropriate use may include: flood, fire, geologic, aviation, noise, cultural, prime soils, biological, scenic resources, minerals, agricultural preserves, utility corridors, water supply, and water recharge.

GOAL S 7: The County will minimize exposure to hazards and structural damage from geologic and seismic conditions.

- **POLICY S 7.1:** Strive to mitigate the risks from geologic hazards through a combination of engineering, construction, land use, and development standards.
- **POLICY S 7.2:** Minimize the risk of potential seismic disaster in areas where inadequate structures exist.
- **POLICY S 7.6:** Protect life and property from risks resulting from landslide, especially in San Bernardino and San Gabriel Mountains that have high landslide potential.

3.7.3 Affected Environment

Physiographic and Topographic Setting

The Project site is located approximately 14 miles east of Victorville, between the Town of Apple Valley and the community of Lucerne Valley in San Bernardino County, California. The 2,756-acre Project site is undeveloped land. The total area of anticipated disturbance is between 200.1 acres and 227.7 aces, or less than 8% of the Project site. The Proposed Project is located within the Granite Mountains, which are located in the western portion of the Mojave Desert. Ground elevations in this area range from approximately 3,500 to 4,650 feet above mean sea level (amsl). Shallow groundwater within the Project area is not anticipated. The surrounding valleys are a significant resource for groundwater supplies for the desert communities.

Tectonic Setting and Geologic Features

The Project area lies within the Mojave Desert Geomorphic Province. The Mojave Desert Geomorphic Province is an expansive region with interior enclosed drainage characterized by isolated mountain ranges, which are separated by desert plains. The combination of prominent northwest-southeast trending faults that intersect secondary east-west trending faults controls topography in the province. The Mojave Desert Geomorphic Province is roughly wedged shaped, with the apex toward the west due to the sharp angle intersection of the Garlock Fault (southern boundary Sierra Nevada) and the San Andreas Fault. The northern boundary of the Mojave Desert Geomorphic Province is separated from the Basin and Range Geomorphic Province by the eastern extension of the Garlock Fault (SCEDC, 2009).

The Mojave Block tectonic region is located between the San Andreas Fault and Garlock fault, extending eastward to the California-Arizona-Nevada border. Most faults within the block are northwest-trending, right-lateral strike-slip faults. The highest concentration of these faults is located near Barstow. This area of high concentrations of northwest-trending, right-lateral strike-slip faults is commonly referred to as the Eastern California Shear Zone. It is estimated this shear zone accommodates between 9 percent and 23 percent of the relative motion between the Pacific and North American tectonic plates. The risk of property damage, injury, and loss of life posed by fault rupture and strong ground motion within the Mojave Block is mitigated by the fact that it is sparsely populated and sparsely developed.

The Project site is located within the eastern part of the Granite Mountains. As the name implies, these mountains are characterized by predominant crystalline bedrock outcrops, principally Mesozoic age monzonite and quartz monzonite of the Triassic Strawberry Peak monzonite (Miller, & Matti, 2001) or the Pleasant View Ridge quartz monzonite (CDMG, 1886). Along with the predominant intrusive igneous bedrock, roof pendants of Metasedimentary rocks of the Oro Grande Formation are present within portions of the Granite Mountains. These Metasedimentary rocks include marble, biotite schist, and quartzite. These roof pendants are more common in the northern portion of the Granite Mountains, north of the Project area.

A narrow valley is present along the western side of the Project area connecting Fairview Valley and Lucerne Dry Lake. This narrow valley roughly bisects the Granite Mountains and is a surface feature related to the Helendale Fault. Rabbit Dry Lake is located to the south of the Project area. Sidewinder Mountain is located to the north of the Granite Mountains and exhibits similar geology although, with a higher percentage of Metasedimentary rocks.

Holocene Alluvium surrounds the base of the Granite and Sidewinder Mountains from the transitions to the valley floor. The Mesozoic bedrock forms many of the resistant ridges, steep slopes, and peeks through this portion of the Western Mojave (Dibblee, 1967).

Historical Seismicity

The Helendale Fault is the closest active fault to the Project area, located approximately two miles west of the Project site. This fault is considered to have Holocene displacement (fewer than 11,000 years). Numerous additional faults are located to the east of the Project area. These faults include the Lenwood, Lockhart, Johnson Valley, Homestead Valley, Emerson, Mt. General, Harper Lake, Blackwater, Calico, and Pisgah Faults. These faults are all roughly sub-parallel to the Helendale Fault and are considered to have historic to Holocene displacement. Recent seismic activity is associated with several of the faults to

the east of the Project area. Faults located along the San Gabriel Mountains, including the North Frontal Fault Zone, are historically active, and considerable historic seismic activity is associated with this area.

Additionally, several unnamed faults have been mapped within the Project area. Data from the California Geological Survey indicate displacement on these unnamed faults is Pre-Quaternary (older than 1.6 million years).

Geologic Hazards

Fault Rupture

The faults pose a potential for fault rupture beneath the Project site area and vicinity. Based on the geologic references used in producing this chapter, the Helendale Fault has been zoned as active Earthquake Fault Hazard Zones by the State of California's Alquist-Priolo Act. Secondary and tertiary strands of the Helendale Fault should also be considered part of these hazard zones.

Ground Shaking

There is a potential for significant ground motions to be felt within the Project area, given its location within a seismically-active region. The Helendale Fault has the greatest potential to cause ground motions in the Project site vicinity. The full length of the Helendale Fault is designated as an Alquist-Priolo Earthquake Fault Zone (**Figure 3.7-1** A-P Zone Map, Fairview Valley Quad).

Trending southeast to northwest, the 90-km-long Helendale Fault is a right-lateral strike-slip fault variety with vertical or high-angle. The fault extends from slightly south of the North Frontal Fault Zone along the northern base of the San Gabriel Mountains to the southern limits of the Lockhart Fault. Due to its close proximity to the Project area, this fault is a significant concern for the Proposed action. The most recent activity on this fault is Holocene. The reported slip rate for the fault is 0.8 mm/yr, and probable magnitudes are M_W 6.5 - 7.3 (SCEDC, 2009). The Helendale fault is reported to cut through the North Frontal Fault Zone of the San Bernardino Mountains.

Liquefaction

Liquefaction is a phenomenon in which loose, water-saturated, granular soils temporarily behave similarly to a fluid when subjected to high-intensity ground shaking. Liquefaction occurs when three general conditions exist: 1) shallow groundwater, 2) low-density silty or fine sandy soils, and 3) high-intensity ground motion.

Seismically-induced settlement in compacted fill and alluvial materials results from contractive volumetric strains in unsaturated soil (Stewart, 2000). There is no potential for seismically-induced settlement in crystalline bedrock. Due to the thin nature of the surface soils in the study area and the likelihood all wind towers would have foundations in the crystalline bedrock, seismically induced settlement is unlikely for the wind tower sites. Depending on the locations of accessory buildings, infrastructure, and access roadways, and the potential for significant ground shaking at the Project site, seismically induced settlements could occur within the alluvial deposits located within the outer areas of the Proposed Project. If they occur, the settlements would likely be limited to the upper 10 to 20 feet (3.0 to 6.1 m) of alluvial soil and are expected to occur relatively uniformly in the alluvial

areas; although, significant differential settlement can occur in areas where depth to shallow bedrock varies.

Ground Subsidence

Ground subsidence is a process characterized by downward displacement of surface material caused by natural phenomena such as removal of underground fluids (oil or water), natural consolidation, or dissolution of underground minerals. It may also be caused by phenomena such as settlement of underground mines. Subsidence can range from small or local collapse to broad regional lowering of the earth's surface. Susceptible areas are predominantly valleys filled with unconsolidated relatively fine-grained sediments, including sand, silty sand, and clayey silt. Organic-rich layers may also be present. While subsidence may occur throughout a susceptible valley, displacement and fissures typically occur at or near the valley margins. Fissure location often corresponds to a subsurface shallowing of the alluvium-bedrock contact or other differences in the subsurface conditions. Fissures may also occur along other existing planes of weakness such as faults. According to the San Bernardino County General Plan Geologic Hazard Overlay map, the Project area is not located in an area susceptible to subsidence.

Collapsible and Expansive Soils

Soil compressibility refers to a soil's potential for settlement when subjected to increased loads, such as from a fill surcharge. Collapse potential refers to the potential settlement of a soil under existing stresses upon being wetted, due to breakup of water soluble bonds between soil particles.

Expansive soils are soils with a significant amount of clay particles that have the ability to give up water (shrink) or take on water (swell). Fine-grained soils, such as silts and clays, may contain variable amounts of expansive clay minerals. When these soils swell, the change in volume exerts significant pressures on loads that are placed on them. This shrink/swell movement can adversely affect foundations, often causing them to crack or shift, with resulting damage to the building or structure they support. According to the San Bernardino County General Plan Geologic Hazard Overlay map, the Project area is not located in an area susceptible to collapsible or expansive soils.

Soil Resources

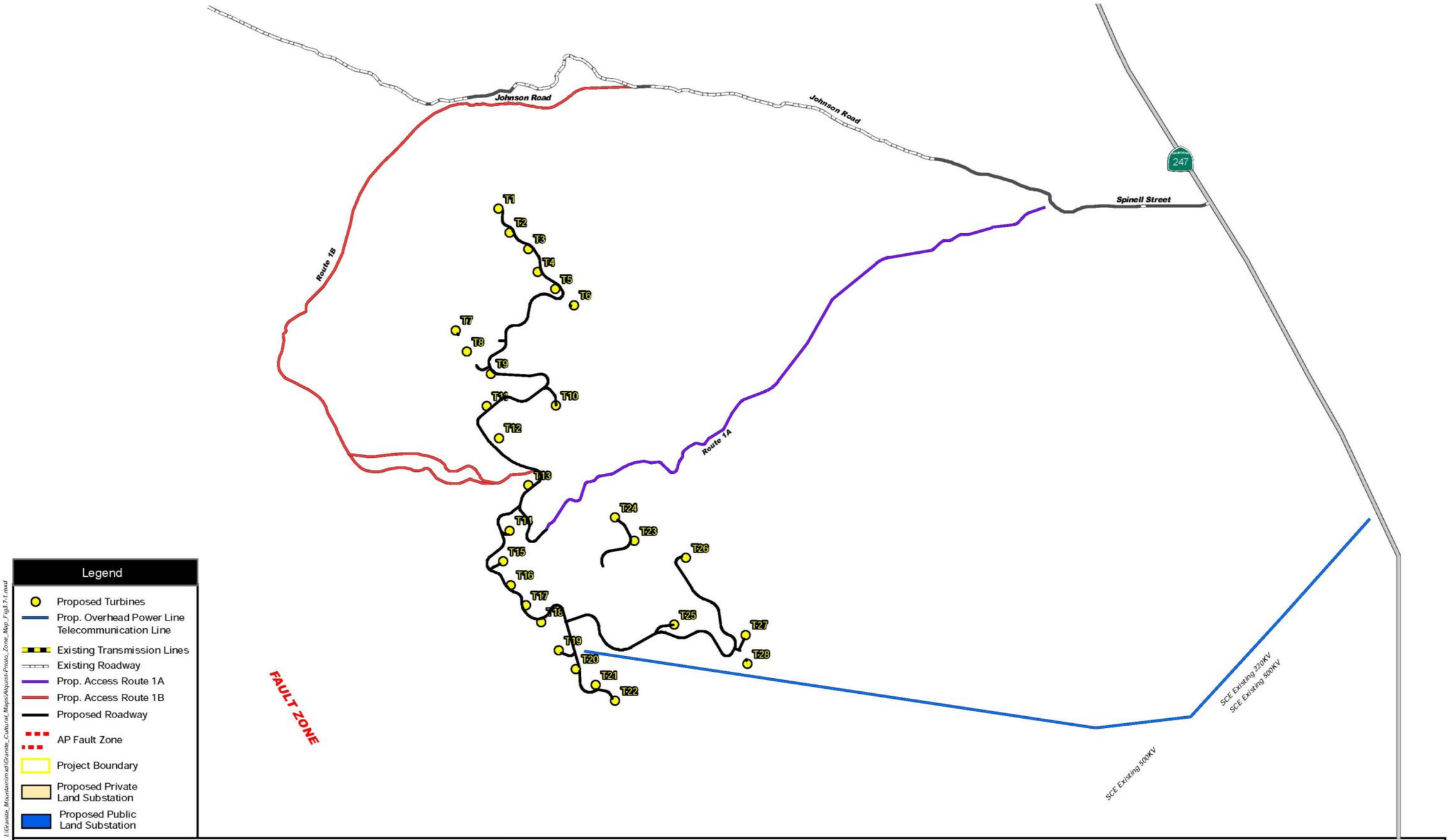
Due in large part to the topography and soil types present at the Project site, agricultural resources, including arable land, and grazing lands are not significant in the Project area. Soil family associations or complexes within the Project area are limited based on a review of the Soil Survey, California U.S. Department of Agriculture (USDA, 2009). The proposed locations for the wind towers appear to all be located within a single soil type (158—Rock Outcrop-Lithic Torriorthents Complex, 15 to 50 Percent Slopes). Several other soil types exist along the lateral limits of the Project area and may be included in the area of potential impact to soil resources depending on alignment of access roads and limits of grading areas. These soil types are as follows and displayed on **Figure 3.7-2** (USDA Soil Map):

158—Rock Outcrop-Lithic Torriorthents Complex, 15 to 50 Percent Slopes

115—Cajon Gravelly Sand, 2 to 15 Percent Slopes

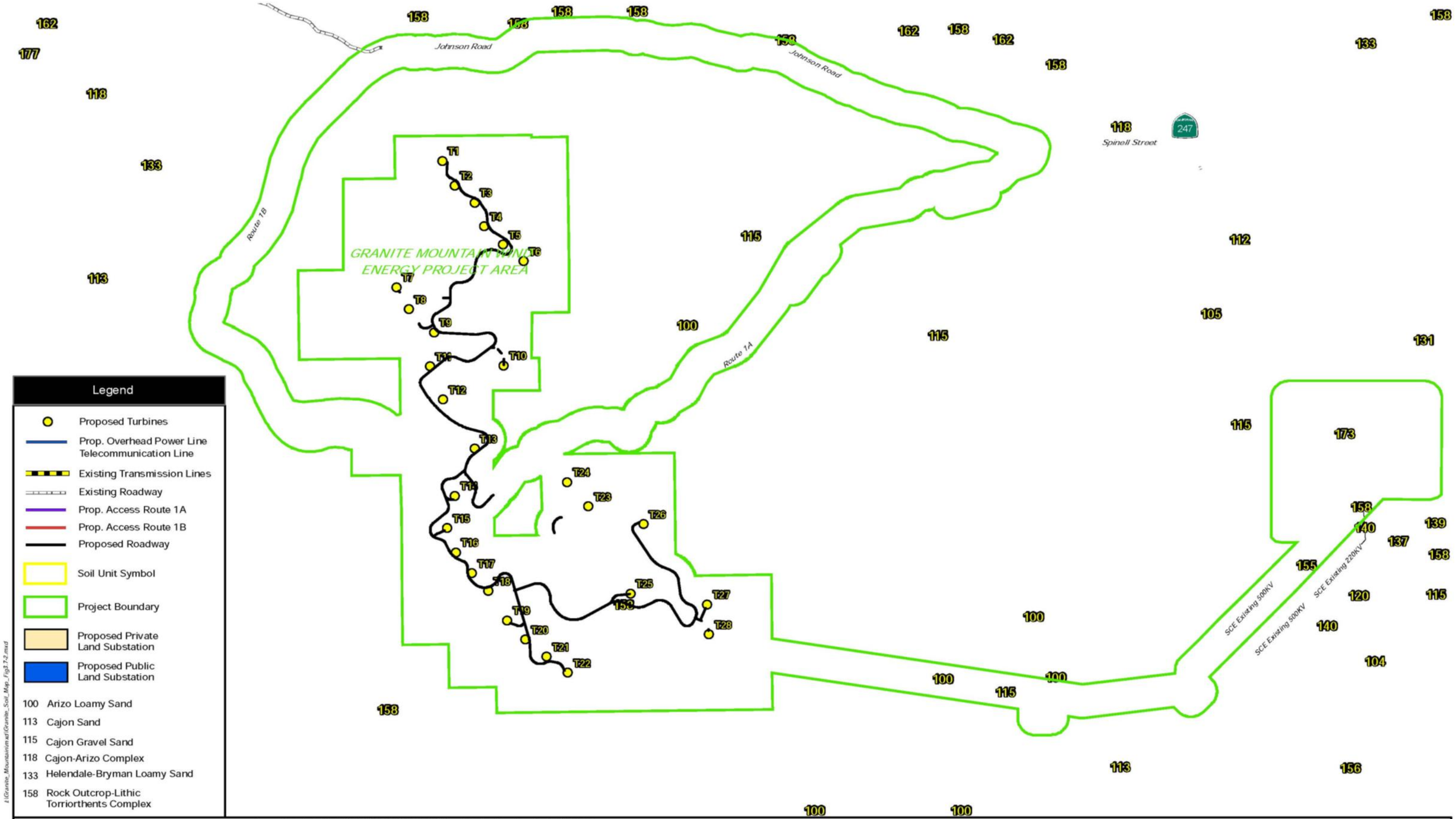
133—Helendale-Bryman Loamy Sands, 2 to 5 Percent Slopes

100—Arizo Gravelly Loamy Sand, 2 to 9 Percent Slopes



GRANITE MOUNTAIN WIND ENERGY PROJECT
ALQUIST-PRIOLO ZONE MAP

Figure: 3.7-1



Sources: Image Connect - Aerials, USDA NRCS Soil Data Mart SB County Mojave River Area Granite Wind 2006

GRANITE MOUNTAIN WIND ENERGY PROJECT
USDA SOIL MAP

Figure: 3.7-2

L:\Granite_Mountain\mxd\Granite_Soil_Map_Fig3.7-2.mxd

3.7.4 Environmental Consequences

The Proposed Project alternatives may be impacted by geological and seismic hazards identified in the study area. For the purposes of this study, the impacts from the Proposed Project Alternative (Alternative 1), the Action on Amendment to CDCA Plan Determines Site Unsuitable for Wind Energy Development (Alternative 2), and the No Action Alternative (Alternative 3) are evaluated based on geologic hazards and soil resources.

Alternative 1: Proposed Project

Fault Rupture/Ground Shaking

The potential impacts of earthquake-related hazards on construction and operations under Alternative 1 are considered moderate based on published information reviewed for this analysis. The effects of strong ground motion from a major earthquake with a local epicenter are considered to present the most significant potential geologic hazard impact to the Proposed Project. The Mojave Block is seismically active; consequently, some degree of surface rupture is possible along the alignment of the Helendale Fault as well as the faults to the east of the Project area. However, the likelihood of surface rupture within the Project area is considered low. The highest concentration of historic earthquake activity is located to the south, along the base of the San Gabriel Mountains. Other areas of historic seismic activity are located to the east of the Project area.

Surface rupturing events caused by movement along the Helendale or other faults would not impact the Proposed Project because these fault zones are outside of the area. Much smaller displacements are anticipated on lesser faults or splays off of the primary faults. These smaller displacements would have less potential for disruption. Proper geotechnical investigation and detailed seismic design would help ensure that impacts of fault rupture and strong ground motion during a nearby major earthquake are minimized. The impacts from ground shaking during smaller earthquakes, as well as the impacts of other earthquake-related hazards, such as liquefaction and subsidence, are not expected to be adversely affected, as they would have few localized impacts that could potentially cause short-term impacts to the WTG facilities. The applicant would implement mitigation measures MMGEO1, 6, and 7 to minimize potential effects from earthquake-related hazards.

Seismically-induced Settlements and Liquefaction

As stated previously, seismically-induced soil liquefaction is a phenomenon in which loose to medium dense, saturated, granular materials undergo matrix rearrangement, develop high pore water pressure, and lose shear strength due to cyclic ground vibrations induced by earthquakes. This rearrangement and strength loss is followed by a reduction in bulk volume. Manifestations of soil liquefaction can include loss of bearing and lateral capacities for foundations and surface settlements and tilting in level ground. Soil liquefaction can also result in instabilities and lateral deformation in areas of sloping ground. Liquefaction or lateral spreading is not possible in the bedrock areas of the Proposed Project. The very coarse grained materials anticipated in the lateral limits of the Project area are not likely to be susceptible to liquefaction (Rahn, 1996).

Subsidence

Land subsidence occurs in valleys and basins primarily as a result of fluid withdrawal, such as oil or water. Other causes of subsidence include mining and sinkhole development in karst topography. Due to several reasons, the Proposed Project is not in an area subject to the causative factors that induce subsidence. Among these reasons is a lack of significant

water or oil withdrawal, mining, karst topography, or thick sequences of sedimentary deposits serving as a groundwater aquifer. When groundwater in thick sediments is extracted for long periods of time, the ground surface can subside. The Project area consists of almost entirely bedrock, except for some areas of relatively thin alluvium or talus covering the bedrock. It is unlikely for the potential for subsidence to occur in the Project area.

Collapsible and Expansive Soils

Expansive soils are not well represented within the Project area, as most of the Project site is underlain by shallow soils overlying granitic bedrock or granitic bedrock outcrop. Access roads to the Project site may extend into areas of proximal alluvial deposits and wash deposits. Proximal alluvial and wash deposits are generally very coarse and are not considered susceptible to collapse upon wetting (hydrocompaction). Therefore, soil collapse and expansive soils are considered to have a low potential to pose a hazard to the proposed actions.

Landslides and Slope Stability

The overall slope stability and susceptibility of a geologic unit to landsliding depends upon various factors, primarily: the presence and orientation of weak structures such as fractures, faults, clay beds, soil thickness, or other planes of weakness; the height and steepness of the pertinent natural or cut slopes; the presence and quantity of groundwater; and the occurrence and intensity of seismic shaking.

In general, the predominant rock type underlying the Project area is Mesozoic crystalline bedrock consisting primarily of the Triassic Strawberry Peak monzonite (Miller, & Matti, 2001) or the Pleasant View Ridge quartz monzonite (CDMG, 1886). These formations are described as stable, and no significant evidence of landsliding is reported for the area. Geologic Hazard maps published by the State of California do not indicate the presence of landslide hazards in the Project area. Given the presence of steep natural slopes and blocky bedrock outcrops, susceptibility to shallow landslides, rock fall, erosion, or mass movements may exist in the Project area.

The structural geology of the area suggests the presence of dipping strata that can promote slip surfaces is limited. While several small faults are mapped within the Granite Mountains, these do not appear to be orientated such that deep seated planes of weakness exist in the slope areas. Common faults and fractures are present, but the available data suggests the highest potential for slope stability issues may be related to rock fall and movement of shallow surface materials along the existing slope areas. The tectonic setting suggests that high levels of ground shaking may occur which may trigger rock fall along the steep slope areas.

The potential effects of slope stability and landslides are expected to be low given the overall geologic materials present and the limited thickness of soil along the slopes. Mitigation of this potential hazard includes design-level geotechnical investigations to evaluate the hazards and propose appropriate mitigation designs. Mitigation measures would be implemented to reduce impacts from landslides or potential slope instability.

Proper mitigations (MMGEO2) would reduce, to the extent possible, the potential for slope stability issues through Project design and use of appropriate BMPs; however, there is limited possibility to mitigate for natural disasters (i.e., rock fall triggered by earthquakes),

and potential adverse effects for slope stability issues and landslides would remain. Once in operation, regular safety inspection and maintenance would help mitigate effects along the slope areas by providing for preventive maintenance and repair to areas with potential instabilities.

Soil Resources

The earthwork required to develop the Project site would include such activities as grubbing, grading, excavating, blasting, and backfilling. Earthwork would be performed to provide adequate foundation conditions for the proposed wind towers as well as associated support buildings and structures and to establish the grades and access roads to each tower. The grading plan would incorporate civil design considerations for drainage control and flood constraints. The proposed grading could potentially change the existing soil profile by mixing and would alter the physical, chemical, and biological characteristics of the native soils. Clearing of any protective vegetation and subsequent soil disturbance activities would likely result in a minor short-term increase in both water usage and wind erosion rates.

No permanent impacts to soil resources are anticipated by construction or maintenance operations associated with Alternative 1. Appropriate construction and maintenance techniques would help minimize any potential adverse effects to temporary soil erosion.

Alternative 1 could adversely affect soils, primarily if construction activities increase soil erosion rates. The applicant would implement BMPs and mitigation measure MMGEO3 to minimize erosion from a construction and operations standpoint.

Alternative Access Route 1A

Alternative Access Route 1A would not be impacted by geological and seismic hazards. This alternative would be exposed to moderate ground shaking. Based on the analysis, the Project area consists mostly of bedrock and, therefore, is not susceptible to liquefaction or subsidence. With implementation of appropriate construction and maintenance techniques, required BMPs, and mitigation measures, soil erosion impacts from construction would be minimized. Alternative Access Route 1A may be susceptible to landslides. Steep slopes along the mountain side are present (slopes are greater than 30%). Approximately 4.5 miles of Alternative Access Route 1A would be constructed up along the mountain side. This area would be susceptible to landslides and/or rockfall hazards. Implementation of mitigation measures would reduce potential adverse effects.

Alternative Access Route 1B

Alternative Access Route 1A would have the same potential impacts as described above for Route 1A. Alternative Access Route 1B would be required to implement appropriate construction and maintenance techniques, required BMPs, and mitigation measures to minimize soil erosion impacts from construction. Alternative Access Route 1B may be susceptible to landslides. Steep slopes along the mountain side are present (slopes are greater than 30%). Approximately 8.7 miles of Alternative Access Route 1B would be constructed around the base and then up the mountainside. This particular area would be susceptible to landslides and/or rockfall hazards. Implementation of mitigation measures would reduce potential adverse effects.

Alternative Jasper Substation 1A – Public Land

Substation 1A is located within a relatively flat area and is not located within an Alquist-Priolo zone. However, ground-shaking impacts, similar to much of the area, are moderate. According to the San Bernardino County General Plan Geologic Hazard Overlay map, the Project area is not located in an area susceptible to liquefaction, subsidence, or collapsible and expansive soils. Substation 1A would be designed in compliance with UBC for Seismic Zone 4 and would implement MMGEO 4 and 5 to further reduce potential seismic hazards to the Project.

Alternative Jasper Substation 1B – Private Land

Environmental impacts are the same as the Substation Alternative 1A, see analysis above.

Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development, ROW Application Denied, and CUP Not Approved

Under this alternative, BLM would amend the CDCA Plan to determine that the site is suitable for wind energy development, but would deny the ROW application for the Proposed Project, and the County would not approve the CUP for the Proposed Project. The site would remain in its present condition consisting of vacant desert lands, and impacts to geologic and soil resources would not occur.

Alternative 3: Action on Amendment to CDCA Plan Determines Site Unsuitable for Wind Energy Development

Under Alternative 3, wind energy development would not be allowed and no changes would occur to the current Project site. BLM public lands and San Bernardino private lands would continue to be vacant and undisturbed until such time as a permitted use or subsequent amendment to the CDCA Plan is approved.

Potential effects to geologic and soil resources from any development of wind farms would not occur under this alternative. No new impacts relating to existing geologic hazards would occur under this alternative; although, any potential improvements or mitigations to existing conditions relating to proper site development would also not occur.

Alternative 4: No Action on Site Suitability and Proposed Project

Under the No Action Alternative, no changes to the current Project site and area would occur. BLM public lands and San Bernardino private lands would continue to be vacant and undisturbed.

Potential impacts from the development of the WTG facilities would not occur under this alternative. No impact to existing geologic or soil resources would be anticipated. No new impacts relating to existing geologic hazards would occur under this alternative; although, any potential improvements or mitigations to existing conditions relating to proper site development would also not occur.

3.7.5 Avoidance, Minimization, and/or Mitigation Measures

The Proposed Project would implement recommended BLM PEIS BMPs, which were adopted as part of the proposed Wind Energy Development Program to ensure minimal impact to natural and cultural resources. In addition to the BLM BMPs, Project-specific

mitigation measures evaluated for their ability to eliminate or reduce the potential substantial adverse impacts related to geologic hazards were developed for the Proposed Project.

BLM BEST MANAGEMENT PRACTICES

Construction BMPs

- Access roads shall be located to follow natural contours and minimize side hill cuts.
- Operators shall identify unstable slopes and local factors that can induce slope instability (such as groundwater conditions, precipitation, earthquake activities, slope angles, and the dip angles of geologic strata). Operators also shall avoid creating excessive slopes during excavation and blasting operations. Special construction techniques shall be used where applicable in areas of steep slopes, erodible soil, and stream channel crossings.
- Erosion controls that comply with county, state, and federal standards shall be applied. Practices such as jute netting, silt fencing, and check dams shall be applied near disturbed areas.

PROJECT-SPECIFIC MITIGATION MEASURES

Construction Mitigation

MMGEO1: Proper engineering design and geotechnical investigations will be performed prior to grading to ensure the site selection, design, and construction accounts for the existing seismic hazards at the Project site.

MMGEO2: Proper design and construction considerations will be followed for the slope areas within the Project area, including BMPs for surface drainage and reducing slope inclinations where grading operations are conducted to minimize potential slope instabilities.

MMGEO3: A Dust Control Plan and a Re-Vegetation Plan would be prepared that addresses the following:

- Soil stabilization practices;
- Control practices to reduce wind erosion of soil stock piles and construction work areas;
- Standard construction and operation practices to minimize dust; and
- Stabilization of soil in areas of disturbance by establishing appropriate vegetation using the appropriate native plant species found within the study area.

MMGEO4: Prior to final design of substation facilities and pole foundations, a geotechnical study would be performed to identify site-specific geologic conditions and potential geologic hazards. The geotechnical study would be performed by professional civil or geotechnical engineers and engineering geologists licensed in the State of California, who would provide design and construction recommendations, as appropriate, to reduce potential impacts from geologic hazards or soil conditions.

MMGEO5: For new substation construction, specific requirements for seismic design would be per the current requirements of the California Building Code (CBC) and the current Institute of Electrical and Electronic Engineers (IEEE) 693 *Recommended Practices for*

Seismic Design of Substation. Other Project elements would be designed and constructed in accordance with the appropriate industry standards, including established engineering and construction practices and methods.

Operation Mitigation

MMGEO6: Once large levels of ground shaking are felt/experienced, facilities inspections would be performed as quickly as possible. Careful examination shall be conducted of the wind towers, support buildings, transmission lines, and adjacent areas throughout the Project area.

MMGEO7: In the event that a major earthquake occurs, the Project Proponent shall perform a full inspection and repair any areas damaged due to the strong ground motion.

3.7.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented

With adherence to and implementation of the above-listed General Plan policies, above-listed mitigation measures, as well as adherence to standard federal, state, and county regulations, the impacts to geology, seismicity, and soil resources are not considered adverse.

3.8 HYDROLOGY AND WATER QUALITY

The purpose of this section is to analyze the Project's impacts on hydrology and water quality. The study area for the hydrologic and water quality conditions extends beyond the project boundaries because regional flood flows and receiving waters must be included into the evaluation. References and sources include Project-specific technical reports for hydrology and water quality, regional permitting guidelines, and County-wide post-construction water quality best management practices criteria.

3.8.1 Impact Criteria

The potential risk of direct and indirect impacts affecting hydrology and water quality is assessed with respect to six criterions. Potential impacts to hydrology and water quality could occur if reasonably foreseeable future actions were to result in any of the following:

- Violate promulgated federal, state, or local water quality standards or objectives;
- Impair existing or potential beneficial uses of Waters of the U.S. or California;
- Result in water or sediment quality conditions that could be harmful to aquatic life or human health, even if an accepted standard were not formally violated;
- Increase the potential for a substantial off-site flood hazard (the substantial flood hazard is greater than 1 percent, or once in 100 years);
- Result in uses or facilities that would substantially degrade surface or groundwater quality; or
- Result in erosion or sedimentation that would alter or impair the course of a permanent stream or substantially alter the area or capacity of a surface water feature.

3.8.2 Regulatory Settings

Federal Regulations

Federal Emergency Management Agency (FEMA)

FEMA is an agency of the United States Department of Homeland Security created to coordinate the response to a disaster that has occurred in the United States that overwhelms the resources of local and state authorities. FEMA also has the responsibility of protecting lives from major flooding events. FEMA has developed and defined geographic flood zone areas by varying levels of flood risk. These zones are depicted on a community's Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area.

Clean Water Act

In 1972, the Federal Water Pollution Control Act (Clean Water Act) was amended to prohibit the discharge of pollutants to Waters of the United States unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. The Clean Water Act (CWA) focused on tracking point sources, primarily from wastewater treatment facilities and industrial waste dischargers, and required implementation of control measures to minimize pollutant discharges. In essence, the statute employs a variety of regulatory and non-regulatory tools to help sharply reduce the direct discharge of pollutants into waterways, finance municipal wastewater treatment facilities, and manage polluted

runoff. The CWA also continued requirements to set water quality standards for all contaminants in surface waters. The CWA made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions (EPA, 2006a).

The EPA published in November 1990 final regulations that established the application requirements for specific categories of industries, including construction projects that encompass greater than or equal to five acres of land. The Phase II Rule became final in December 1999, expanding regulated construction sites to those greater than or equal to one acre. The activity, which discharges either directly to surface waters or indirectly through municipal separate storm sewer systems (MS4s), must be regulated by an NPDES permit.

Water Quality Assessments

The CWA requires all states to conduct water quality assessments of their water resources to identify water bodies that do not meet water quality standards. Water quality standards have three elements: the designated beneficial uses, water quality objectives, and the anti-degradation policy. After setting standards, states assess their waters to determine the degree to which these standards are being achieved. States may collect biological, chemical, and physical data (such as water quality, fish tissue, and sediments); land use data; predictive models; and surveys to evaluate waters. Waters that are rated by the states as “good” fully support all of their designated beneficial uses. Water bodies that do not meet water quality standards are placed on the CWA Section 303(d) List of Water Quality Limited Segments. The Proposed Project is located within the U.S. EPA 305 (b) Assessment Unit designated as the Mojave River. The only water body within the vicinity with water quality objectives is the Mojave River.

The following table presents the water quality designated uses for the Mojave River.

Table 3.8-A: State-Designated Uses for Mojave River

EPA WATER TYPE: STREAM/CREEK/RIVER	WATER SIZE: 126.328 MILES	
STATE-DESIGNATED USE	ATTAINMENT STATUS	THREATENED
Agricultural Supply	Not Assessed	No
Aquaculture	Not Assessed	No
Cold Freshwater Habitat	Partial	No
Commercial and Sport Fishing	Partial	No
Estuarine Habitat	Not Assessed	No
Freshwater Replenishment	Not Assessed	No
Ground Water Recharge	Not Assessed	No
Industrial Service Supply	Not Assessed	No
Municipal and Domestic Supply	Partial	No
Non-Contact Water Recreation	Partial	No
Rare, Threatened, Or Endangered Species	Not Assessed	No
Spawning, Reproduction, and/or Early Development	Not Assessed	No
Warm Freshwater Habitat	Partial	No
Water Contact Recreation	Partial	No
Wildlife Habitat	Partial	No
Overall Use Support	Partial	No
Aquatic Life Support	Partial	No
Fish Consumption	Partial	No

EPA WATER TYPE: STREAM/CREEK/RIVER	WATER SIZE: 126.328 MILES	
STATE-DESIGNATED USE	ATTAINMENT STATUS	THREATENED
Swimmable	Partial	No
Secondary Contact Recreation	Partial	No
Drinking Water Supply	Partial	No
Agriculture	Not Assessed	No

Source: National Assessment Database, 2009.

State Regulations

Porter Cologne Water Quality Control Act

Division 7 of the California Water Code, also known as the Porter-Cologne Water Quality Control Act, contains provisions that cover water quality protection and management for California's waters. The Porter-Cologne Act establishes the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs) as the principal state agencies responsible for the protection and the enhancement of the quality of California's waters. The SWRCB sets statewide policy, and together with the RWQCBs, implements state and federal laws and regulations. In California, the NPDES permit program is administered by the SWRCB, through the RWQCBs. The Porter-Cologne Water Quality Control Act Section 13000 directs each of the RWQCBs to develop a Water Quality Control Plan (Basin Plan) for all areas within its region and jurisdiction.

National Pollution Discharge Elimination System Permit

Project construction water quality compliance would be achieved via the guidelines presented in the SWRCB NPDES Construction General Permit Order 2009-0009-DWQ effective July 1, 2010. Based on the requirements of this general permit, the development and implementation of an SWPPP would be required prior to commencement of any construction-related activities. The SWPPP would be designed to 1) prevent all construction pollutants from contacting stormwater and with the intent of keeping all products of erosion from moving off-site into receiving waters; 2) eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the U.S.; and 3) perform inspections of all BMPs. Further, the SWPPP would outline a series of erosion control, sediment control, and non-stormwater BMPs and BMP monitoring and sampling protocols for the Proposed Project to help reduce the impacts to stormwater discharges as a result of construction activities.

California Department of Fish and Game

The California Department of Fish and Game (CDFG) monitors streambed alteration to conserve, protect, and manage California's fish, wildlife, and native plant resources. Section 1602 of the Fish and Game code requires any person, state, or local governmental agency or public utility to notify the CDFG before beginning an activity that would substantially divert, obstruct, or change the natural flow of the bed, channel, or bank (including associated riparian vegetation) of a river, stream, or lake and/or use material from, or deposit material into, a streambed prior to commencement of the activity. Streams include, but are not limited to, intermittent and ephemeral streams, rivers, creeks, dry washes, sloughs, blue-line streams, and watercourses with subsurface flow. If the CDFG determines that the action could have an adverse effect on existing fish and wildlife resources, a Lake or Streambed Alteration Agreement is required. The Proposed Project was surveyed for potential resource value for wildlife species such as food, potential nesting, and roosting habitat for birds. Observations were made as to whether specific habitat serves as a wildlife

migration or dispersal corridor or contains habitat that is distinct from the adjacent vegetative community.

County Regulations

Water Quality Control Plan: Regional Basin Plan

The Basin Plan sets the basis for each RWQCB's regulatory program. The Basin Plan identifies the beneficial uses and the water quality objectives for all receiving water bodies within the RWQCB's jurisdiction. A beneficial use comprises the various ways that a water body can be used for the benefit of people and/or wildlife. Examples include drinking, swimming, industrial and agricultural water supply, and the support of fresh and saline aquatic habitats. CWA section 303 (33 U.S.C. '1313) defines water quality standards as consisting of both the uses of the surface (navigable) waters involved and the water quality criteria that are applied to protect those uses. Under the Porter-Cologne, these concepts are separately considered as beneficial uses and water quality objectives. Beneficial uses and water quality objectives are to be established for all waters of the state, both surface and subsurface (groundwater) (Water Quality Control Plan for the Lahontan Region North and South Basins, 1991). Water quality objectives are the water quality standards used to assess the potential impacts of a project's discharges on the water quality of receiving water. Water quality objectives, as defined by the California Water Code Section 13050(h), are the "limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses or the prevention of nuisance within a specific area."

The Proposed Project resides on the border between Lahontan RWQCB (6) and Colorado RWQCB (7). The western portion of the Proposed Project is located in the Upper Mojave River Valley groundwater basin of the South Lahontan River, and the eastern portion of the Proposed Project is located in the Lucerne hydrologic unit of the Colorado River Basin (TtEC, 2008). The Proposed Project must comply with applicable elements of the region's Basin Plan, as well as the Porter-Cologne Water Quality Control Act. The Basin Plan identifies the beneficial uses for all receiving waters within the RWQCB's jurisdiction and water quality standards set forth to protect beneficial uses. The beneficial uses and designations presented in this document are taken directly from the respective Basin Plan.

San Bernardino County Flood Control District

The San Bernardino County Flood Control District was created by the California Legislature under the San Bernardino County Flood Control District Act, Chapter 73, Statutes of 1939. The District was formed as an urgent and progressive measure for the preservation and promotion of public peace, health, and safety as a direct aftermath of the disastrous March 1938 floods. The District is primarily responsible for control of flood waters in major watercourses and channels under the jurisdiction of the District and increasing groundwater recharge services at flood control district facilities. The District has developed a system of facilities, including dams, conservation basins, channels, and storm drains, to intercept and convey flood flows through and away from the major developed areas within the County. The principal functions are to provide flood protection on major streams, water conservation, and storm drain construction.

Water Quality Management Plan

San Bernardino County requires the Proposed Project to develop and implement a Project-specific Water Quality Management Plan (WQMP). A WQMP is designed to help minimize

the detrimental effects of urbanization on the beneficial uses of receiving waters, including effects caused by increased pollutant loads and changes in hydrology. These adverse effects may be minimized through the implementation of site designs that reduce runoff and pollutant transport by minimizing impervious surfaces and maximizing on-site infiltration, site design BMPs, source control BMPs, and/or either on-site structural treatment control BMPs, or participation in regional or watershed-based structural treatment control BMPs. A project WQMP shall meet all the standards of compliance and any other requirements specified in the San Bernardino MS4 Permit. The Project-specific WQMP must identify all pollutants that are expected or potentially expected from the Proposed Project land use or category. Site-specific conditions must also be considered as potential pollutant sources. A Project-specific WQMP was developed for the Proposed Project (see Appendix J).

County of San Bernardino General Plan- Safety Element

GOAL S 4: The County will minimize damage due to wind and water erosion where possible.

- **POLICY S 4.3:** Tailor grading, land clearance, and grazing to prevent unnatural erosion in erosion susceptible areas.

GOAL S 5: The County will provide adequate flood protection to minimize hazards and structural damage.

- **POLICY S 5.6:** Prevent flood hazard resulting from drainage from adjacent development.

Lucerne Valley Area Plan (Safety Element)

Goal LV/S 3: Coordinate land use planning efforts with flood control planning and improvement programs.

- **POLICY LV/S 3.2:** Prior to development, utilize the Flood Plain Overlay and Floodway District to identify areas of flood hazard and incorporate local flooding conditions into project design.

3.8.3 Affected Environment

Hydrology - Drainage Patterns

The Proposed Project is located within the western Mojave Desert. This watershed area is composed of mountain ranges and dry lakes (playas) that are predominately flat with sparse vegetation. The Mojave Desert receives infrequent rainfall from only the largest storms originating from the Pacific Ocean. Streams, washes, and adjacent playas are dry most of the year (TtEC, 2008). The Mojave River is located approximately 15 miles west of the Proposed Project. The Mojave River is the dominant floodplain, between the San Bernardino Mountains to the east and the San Gabriel Mountains to the west. A site map showing the Proposed Project is depicted on **Figure 3.8-1**.

The Proposed Project is within the Upper Mojave and Lucerne Lake Watershed. This planning area consists of many small internal drainage basins that cover approximately 6,500 square miles. In this area, precipitation is higher and frost often occurs. The average rainfall over this area is documented at five inches per year. In most areas within the Mojave region, streams would flow only after long periods of steady rain, typically during a

wet winter. The periodicity and intensity of such rain events depends on elevation, but in the lower regions, historically floods may only happen in intervals measured in several years to decades. Little of the rainwater percolates into the groundwater table and most is lost by evaporation and by evapotranspiration. Groundwater is stored principally in the unconsolidated alluvium.

The Water Crossings Survey Report analyzed the drainage patterns through the Proposed Project. Most of the 27 identified ephemeral drainages, dry washes, and ravines were observed along the proposed roads and transmission line corridor (crossings). There are no drainages on the Project site. No jurisdictional wetlands were found within the Project survey corridor (TtEC, 2009). Further, there are no areas identified on the FEMA flood zone map.

Drainage crossings were identified and categorized. Approximately 15 (56%) crossings were identified as category 1 drainages. These drainages are small (generally 1 to 6 feet wide), shallow channels with weak bed and bank features and are located in the bajadas and valleys. These drainages gradually become less defined as stormwater dissipates. The bed substrate tends to be sandy to gravelly, and the beds typically contain vegetation. These features are likely to migrate during large storm events and are part of braided fluvial systems. Approximately 6 (22%) crossings were identified as category 2 drainages. These drainages are larger (generally 7 to 15 feet wide), have a more defined bed and bank features, and are generally located near the base of the mountain where runoff accumulates. The bed substrate consists of sand and larger rocks to boulders. The beds are typically devoid of vegetation. These drainages are less likely to migrate during large storm events. These drainages dissipate into category 1 drainages as they travel down slope, becoming smaller as water percolates into the soil and is lost through evaporation. Approximately 6 (22%) crossings were identified as Category 3 drainages. These drainages are wide (generally greater than 15 feet) ravines and gulches with no bed features. Typically, they are located on the slopes of the mountain. The bed substrate consists of coarse sand to large rocks and boulders with some vegetation. These drainages are the main courses for stormwater runoff from the top of the mountain and feed the category 1 and 2 drainages. Overall, transmission lines have been strategically placed to help minimize the flood impacts.

Water Quality

The Project site is located within the jurisdiction of both the Lahontan and Colorado RWQCBs. The Granite Mountains are the eastern boundary for the Lahontan Regional Water Quality Control Board (LRWQCB) and the western boundary for the Colorado River Basin Regional Water Quality Control Board (CBRWQCB). Both the LRWQCB and the CBRWQCB set water quality standards for all ground and surface waters within their region. Water quality standards are defined under the Clean Water Act to include the beneficial uses of specific water bodies, the level of water quality that must be met and maintained to protect those uses (water quality objectives), and the state's anti-degradation policy. Water quality standards for all ground and surface waters overseen by either LRWQCB or CBRWQCB and are documented in their individual Basin Plans.

Water quality assessment begins with an evaluation of water quality standards and proposed activities. Water quality standards have three elements: beneficial uses, water quality objectives, and the anti-degradation policy. The designated beneficial uses for Mojave River are: Municipal, Agricultural, Groundwater, Recreational 1 (Contact),

Recreational 2 (Non-contact), Commercial, Warm, Cold, and Wild. The Mojave River is not listed on the CWA Section 303(d) List of Water Quality Limited Segments. Numerical water objectives have been set for coliform bacterial, total chorine residual, dissolved oxygen, pH, temperature, turbidity, color, floating materials, pesticides, and settable materials. The Project design includes an evaluation for each culvert potentially affected by the action and proposed improvements.

Lahontan Basin Plan

The Lahontan region contains the highest (Mount Whitney) and lowest (Death Valley) points in the contiguous United States and includes the eastern slopes of the Warner, Sierra Nevada, San Bernardino, Tehachapi, and San Gabriel Mountains, as well as the Granite Mountains. Soils in the desert valleys of the region are derived from alluvium. The region is generally in a rain shadow; however, precipitation amounts can be high (up to 70 inches) at higher elevations. Most precipitation in the mountainous areas falls as snow. Desert areas receive relatively little annual precipitation (fewer than 2 inches in some locations), but this can be concentrated and lead to flash flooding. The varied topography, soils, and microclimates support sagebrush and creosote bush scrub in the desert areas to pinyon-juniper and mixed conifer forest at higher elevations. Subalpine and alpine “cushion plant” communities occur on the highest peaks. The local receiving waters for the Proposed Project are the Mojave River. The following table lists and defines the beneficial uses of the surface water receiving waters.

Table 3.8-B: Beneficial Uses of Surface Water Receiving Waters for Mojave River

BENEFICIAL USES	
MUN, AGR, GWR, REC-1, REC-2, COMM, WARM, COLD, WILD	
DEFINITIONS	
MUN	Waters used for community, military, municipal, or individual water supply systems. Uses may also include drinking water supply.
AGR	Waters are used for farming, horticulture, or ranching. Uses may include, but are not limited to, irrigation, stock watering, and support of vegetation for range grazing.
GWR	Groundwater recharge waters, used for natural or artificial recharge of groundwater for purposes that may include future extraction, maintaining water quality, or halting saltwater intrusion in freshwater aquifers.
REC-1	Water contact recreation waters, used for recreational activities involving body contact with water where ingestion of water is reasonably possible. Uses may include swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing, and use of natural hot springs.
REC-2	Non-contact water recreation waters, used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water would be reasonably possible. These uses may include picnicking, sunbathing, hiking, beachcombing, camping, boating, sightseeing, and aesthetic enjoyment in conjunction of the above activities.
COMM	Commercial or recreational collection of fish or other organisms, including, but not limited to, uses involving organisms intended for human consumption.
WARM	Warm freshwater habitat waters support warm-water ecosystems that may include preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
COLD	Preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
WILD	Wildlife habitat waters support wildlife habitats that may include the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.

Granite Mountain WQMP, June 2008

All listed water quality objectives governing water quality in inland surface waters were evaluated for potential impacts from development of the Proposed Project; however, only

those numeric and narrative water quality objectives that are most relevant to the Proposed Project are listed in Table 3.8-C, Numeric Water Quality Objectives - Mojave Hydrologic Unit Specific, and Table 3.8-D, Applicable Narrative Water Quality Objectives - Mojave River, respectively.

The Mojave River is the receiving water body for the Proposed Project. Water quality objectives include both numerical and narrative standards that are directed toward the protection of beneficial uses of surface waters. The majority of the Proposed Project drains to the western portions of the Mojave River. According to the current 2006 CWA Section 303(d) List of Water Quality Limited Segments, there are no receiving water bodies associated with the Proposed Project that are listed to have any impairments or beneficial uses. Below is a list of numerical and narrative water quality objectives that apply to all water bodies within the Lahontan watershed and the specific water quality objectives for the Mojave River.

Table 3.8-C: Numeric Water Quality Objectives

MOJAVE HYDROLOGIC UNIT SPECIFIC						
	TDS	***Chloride (Cl)***	***Sulfate (SO_4)***	***Fluoride (F)***	***Boron (B)***	***NO_3 as NO_3***
Mojave River (at Victorville)	OBJECTIVE (MG/L) (MAXIMUM)					
	-	75 100	40 100	0.2 1.5	0.2 0.3	
Mojave River (at Lower Narrows)	312					5

Annual average value/90th Percentile Value.
TDS = Total dissolved solids
Granite Mountain WQMP, June 2008

Table 3.8-D: Applicable Narrative Water Quality Objectives

MOJAVE RIVER
Biostimulatory Substances
Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect the water for beneficial uses. Waters shall not contain concentrations of chemical constituents in amounts that adversely affect the water for beneficial uses.
Floating Materials, Settleable Materials Suspended Materials
Waters shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect the water for beneficial uses. For natural high-quality waters, the concentrations of floating material shall not be altered to the extent that such alterations are discernable at the 10 percent significance level.
Waters shall not contain substances in concentrations that result in deposition of material that causes nuisance or that adversely affects the water for beneficial uses. For natural high-quality waters, the concentration of settleable materials shall not be raised by more that 0.1 milliliter per liter.
Waters shall not contain suspended materials in concentrations that cause nuisance or that adversely affect the water for beneficial uses. For natural high-quality waters, the concentration of total suspended materials shall not be altered to the extent that such alterations are discernible at the 10 percent significance level.
Oil and Grease
Waters shall not contain oils, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, cause nuisance, or otherwise adversely affect the water for beneficial uses. For natural high-quality waters, the concentration of oils, greases, or other film or coat generating substances shall not be altered.
Chemical Constituents
Waters designated as MUN shall not contain concentrations of chemical constituents in excess of the maximum contaminant level (MCL) or secondary maximum contaminant level (SMCL) based upon

MOJAVE RIVER
drinking water standards specified in Title 22 of the California Code of Regulations. Waters designated as AGR shall not contain concentrations of chemical constituents in amounts that adversely affect the water for beneficial uses (i.e., agricultural purposes).
Pesticides
Pesticide concentrations, individually or collectively, shall not exceed the lowest detectable levels. There shall not be an increase in pesticide concentrations found in bottom sediments. There shall be no detectable increase in bioaccumulation of pesticides in aquatic life. According to the Basin Plan, pesticides are defined to include insecticides, herbicides, rodenticides, fungicides, pesticides, and all other economic poisons. An economic poison is any substance intended to prevent, repel, destroy, or mitigate the damage from insects, rodents, predatory animals, bacteria, fungi, or weeds capable of infesting or harming vegetation, humans, or animals (CA Agriculture Code § 12753).
Sediment
The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect the water for beneficial uses.
Taste and Odor
Waters shall not contain taste or odor-producing substances in concentrations that impart undesirable tastes or odors to fish or other edible products of aquatic origin, cause nuisance, or adversely affect the water for beneficial uses. For naturally high-quality waters, the taste and odor shall not be altered.
Toxicity
All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in, human, plant, animal, or aquatic life.

Granite Mountain WQMP, June 2008

Colorado Basin Plan

The Proposed Project's eastern portion is located in the Colorado Basin Plan's Lucerne Valley Hydrologic Planning Area. In the upper desert, which contains Lucerne Valley, Yucca Valley, Joshua Tree, and Twentynine Palms, precipitation is higher and frost often occurs. The San Bernardino Mountains on the northwest have the highest peaks in the planning area, with elevations exceeding 7,000 feet. Rainfall is sporadic, and amounts vary widely with location. Mean annual precipitation ranges from 16 inches in the San Bernardino Mountains to less than 3 inches in the Bristol Lake (dry) area. The average annual rainfall over the entire planning area is 5 inches. No significant creeks exist within the Project area.

The Colorado River Basin is split into two primary regions – West Basin and East Basin. This Proposed Project is located within the West Basin portion of the overall Colorado River Basin description. The local receiving waters for the eastern half of the Proposed Project are unlisted washes (Ephemeral Streams). The following table lists and defines the beneficial uses of these receiving waters.

Table 3.8-E: Beneficial Uses of Receiving Waters for Ephemeral Streams

BENEFICIAL USES	
GWR, REC-2, WILD	
Definitions	
GWR	Groundwater recharge waters, used for natural or artificial recharge of groundwater for purposes that may include future extraction, maintaining water quality, or halting saltwater intrusion in freshwater aquifers.
REC-2	Non-contact water recreation waters, used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water would be reasonably possible. These uses may include picnicking, sunbathing, hiking, beachcombing, camping, boating, sightseeing, and aesthetic enjoyment in conjunction of the above activities.
WILD	Wildlife habitat waters support wildlife habitats that may include the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.

Granite Mountain WQMP, June 2008

All listed water quality objectives governing water quality in inland surface waters were evaluated for potential impacts from development of the Proposed Project; however, there are no specific water quality objectives for the unnamed ephemeral streams related to this Project. Only REC-2 objectives have been designated for this Project. The most relevant objectives are shown in Table 3.8-F, Numeric Water Quality Objectives - REC-2, and Table 3.8-G, Applicable Narrative Water Quality Objectives - Ephemeral Streams, respectively.

In waters designated for water contact recreation (REC-1) or non-contact water recreation (REC-2), the bacterial objectives listed in Table 3.8-F apply. Although the objectives are expressed as fecal coliforms, E. coli, and enterococci bacteria, they address pathogenic microorganisms in general (e.g., bacteria, viruses, and fungi). Based on a statistically sufficient number of samples (generally not less than five samples equally spaced over a 30-day period), the geometric mean of the indicated bacterial densities should not exceed one or the other of the following:

Table 3.8-F: Numeric Water Quality Objectives - REC-2

REC-2 BACTERIA OBJECTIVES	
REC-2	
E. coli	630 per 100 ml
Enterococci	165 per 100 ml
nor shall any sample exceed the following maximum allowables:	
E. coli	2,000 per 100 ml
Enterococci	500 per 100 ml

Granite Mountain WQMP, June 2008

Table 3.8-G: Applicable Narrative Water Quality Objectives - Ephemeral Streams

EPHEMERAL STREAMS
Aesthetic Qualities
All waters shall be free from substances attributable to wastewater of domestic or industrial origin or other discharges that adversely affect beneficial uses not limited to: ▪ Settling to form objectionable deposits; ▪ Floating as debris, scum, grease, oil, wax, or other matter that may cause nuisances; and ▪ Producing objectionable color, odor, taste, or turbidity.
Tainting Substances
Water shall be free of unnatural materials that individually or in combination produce undesirable flavors in the edible portions of aquatic organisms.
Toxicity
All waters shall be maintained free of toxic substances in concentrations that are toxic to or that produce detrimental physiological responses in human, plant, animal, or indigenous aquatic life. Compliance with this objective would be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, 96-hour bioassay, or bioassays of appropriate duration or other appropriate methods as specified by the RWQCB. Effluent limits based upon bioassays of effluent would be prescribed where appropriate, additional numerical receiving water objectives for specific toxicants would be established as sufficient data become available, and source control of toxic substances will be encouraged. The survival of aquatic life in surface waters subjected to a waste discharge or other controllable water quality factors shall not be less than that for the same water body in areas unaffected by the waste discharge or other control water, which is consistent with the requirements for “experimental water” as described in *Standards Methods for the Examination of Water and Wastewater*, 18th Edition. As a minimum, compliance with this objective shall be evaluated with a 96-hour bioassay. As described in Chapter 6 of this DEIS/EIR, the RWQCB will conduct toxic monitoring of the appropriate surface waters to gather baseline data as time and resources allow.

EPHEMERAL STREAMS
Temperature
The natural receiving water temperature of surface waters shall not be altered by discharges of wastewater unless it can be demonstrated to the satisfaction of the RWQCB that such alteration in temperature does not adversely affect beneficial uses.
Suspended Solids and Settleable Solids
Discharges of wastes or wastewater shall not contain suspended or settleable solids in concentrations that increase the turbidity of receiving waters, unless it can be demonstrated to the satisfaction of the RWQCB that such alteration in turbidity does not adversely affect beneficial uses.
Total Dissolved Solids
Discharges of wastes or wastewater shall not increase the total dissolved solids content of receiving waters, unless it can be demonstrated to the satisfaction of the RWQCB that such an increase in total dissolved solids does not adversely affect beneficial uses of receiving waters.
Biostimulatory Substances
Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.
Sediment
The suspended sediment load and suspended sediment discharge rate to surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.
Turbidity
Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses.
Radioactivity
Radionuclides shall not be present in waters in concentrations that are deleterious to human, plant, animal, or aquatic life or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.
Chemical Constituents
No individual chemical or combination of chemicals shall be present in concentrations that adversely affect beneficial uses. There shall be no increase in hazardous chemical concentrations found in bottom sediments or aquatic life.
Pesticide Wastes
The discharge of pesticidal wastes from pesticide manufacturing processing or cleaning operations to any surface water is prohibited.

Granite Mountain WQMP, June 2008

Groundwater

Lahontan Basin Beneficial Uses - Groundwater

Groundwater in the Lahontan Basin is stored principally in the unconsolidated alluvium. Except for areas near some of the dry lakes, groundwater is unconfined. The depth of the water bearing deposits is not known, but the basins have accumulated hundreds of feet of sediments. As with surface waters, a regional Basin Plan also provides beneficial uses and water quality objectives for regional groundwater basins (Table 3.8-H). The western portion of the Proposed Project is mapped within the Department of Water Resources Basin Unit 6-42, Upper Mojave River Valley unit. There may be some flow (less than an average of 100 acre-feet per year) from the Lucerne Hydrologic unit of the Colorado Basin into the Upper Mojave River Hydrologic Subunit of the South Lahontan Basin.

Table 3.8-H: Beneficial Uses of Groundwater for Upper Mojave River Valley Unit

BENEFICIAL USES	
MUN, IND, AGR, FRSH, AQUA	
Definitions	
MUN	Uses of water for community, military, or individual water supply systems, including, but not limited to, drinking water supply.

BENEFICIAL USES	
MUN, IND, AGR, FRSH, AQUA	
Definitions	
IND	Uses of water for industrial activities that do not depend primarily on water quality, including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, and oil well repressurization.
AGR	Uses of water for farming, horticulture, or ranching, including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
FRSH	Uses of water for natural or artificial maintenance of surface water quantity or quality.
AQUA	Uses of water for aquaculture or mariculture operations, including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes.

Granite Mountain WQMP, June 2008

Colorado Basin Beneficial Uses - Groundwater

The eastern portion of the Proposed Project is mapped within the Colorado's Basin Plan's Lucerne Hydrologic Unit. A regional Basin Plan also provides beneficial uses and water quality objectives for regional groundwater basins (Table 3.8-I). As previously stated, there may be some flow (less than an average of 100 acre-feet per year) from the Lucerne Hydrologic unit into the Upper Mojave River Hydrologic Subunit of the South Lahontan Basin.

The Lucerne Hydrologic Unit is one of a number of groundwater basins in the region that are in overdraft. In some areas, there have been indications of a possible increase of mineral content of the groundwater. Further studies would be conducted by the CBRWQCB to develop groundwater objectives and implementation plans for this unit.

Table 3.8-I: Beneficial Uses of Groundwater for Lucerne Unit

BENEFICIAL USES	
MUN, IND, AGR	
DEFINITIONS	
MUN	Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
IND	Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, and oil well repressurization.
AGR	Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

Granite Mountain WQMP, June 2008

3.8.4 Environmental Consequences

Impacts to hydrology and water quality are assessed for three alternatives that have been determined to 1) have the potential to achieve the Project's purpose and need and 2) be technically practicable.

Alternative 1: Proposed Project

Hydrology

The Project-specific Water Quality Management Plan (WQMP) compared the Proposed Project pre-development and post-development runoff flows of 1, 2, and 5-year return periods. The overall increase in post development peak flow rate for the return periods was estimated to be approximately 0.16% (1), 0.20% (2), and 0.13% (5), respectively. The

analysis included a comparison of the sediment yield utilizing the Universal Soil Loss Equation. The overall sediment yield increase in the post development tonnage was estimated to be approximately 0.59% (1), 0.42% (2), and 0.31% (5), respectively. Refer to Table 3.8-J for the estimated values. The slight increase in flow and sediment yield is directly related to the fact that the increase in impervious area is approximately seven acres of the total 91.2 acres, which does not affect the overall hydrologic functions of the impacted area. Impervious areas are defined as a hard surface that either prevents or retards the entry of water in the soil.

Impervious areas within the Proposed Project include the O&M building, the turbine foundations, meteorological towers, and substations. The majority of the WTG facility would be located on the top of Granite Mountain, with the access road located primarily along the top of the ridge. As a result, very little watershed area is located in the direct area of the wind turbine equipment and the adjacent roadways. The one exception is the portion of the roadway extending from the valley floor to the top of the mountain. Typically, these roads would traverse along or across drainage ways with a significant slope or gradient capable of moving sediment. Careful engineering consideration of the hydrologic conditions and the stormwater runoff would be required in this area. The sediment loads from the Proposed Project would not increase significantly. Thus, there would be no impact to crossings or local receiving waters.

No measurable effects are anticipated by the implementation of the Proposed Project. Impacts to erosion and sedimentation are not considered to be adverse.

Table 3.8-J: Pre- and Post-development Hydrology Comparison

Return Period (Yr)	Total Volume (Acre-feet)		Sediment Yield (Tons)	
	Pre	***Post***	***Pre***	***Post***
1	44.5	44.9	8,270	8,319
2	90.4	90.9	16,020	16,088
5	166.1	166.8	28,574	28,662

Granite Mountain WQMP, June 2008

The Proposed Project is not located within the 100-year floodplain of the Mojave River. Analysis presented in the Project-specific WQMP shows that the percentage of the delta in flow and sediment transport between the pre-development and post-development conditions are all less than 1%. There would be no hydrologic conditions of concern for this Project. Therefore, the Proposed Project would not increase off-site flood hazards.

Water Quality

The LRWQCB and CBRWQCB have set water quality standards for all ground and surface waters within their jurisdictions. Water quality standards include the beneficial uses of specific water bodies and the levels of water quality that must be met and maintained to protect those uses. Nine beneficial uses are recognized within the Mojave River within the LRWQCB, and three beneficial uses are recognized for the ephemeral streams within the CBRWQCB. Regulatory programs from both LRWQCB and CBRWQCB are designated to minimize and control discharges to surface and groundwater within the region, largely through permitting, such that water quality standards are effectively attained.

A Project-specific WQMP was prepared to reduce the impacts to water quality to the Mojave River and ephemeral streams (see Appendix J). The WQMP identified pollutants of concern that are based on land use designations and do not take into consideration the Proposed Project's planned use. Seven pollutant types were identified for this Project area: bacteria and viruses, nutrients, pesticides, sediments (except during construction), trash and debris, oxygen-demanding substances, and oil and grease. However, based on the actual characteristics of the Proposed Project, none of these would be "expected" pollutants, except for sediment during the construction phase. Therefore, to reduce potential impacts during construction and post construction, BMPs have been designed to address the pollutants of concern and would reduce the impacts on water quality.

Water quality during the construction phase of the Proposed Project would be managed through the development and implementation of an SWPPP. A selection of sediment control, erosion control, and non-stormwater management BMPs would be selected to help reduce the discharge of pollutants from the construction site. The existing water crossings would be maintained and channeled around and through the Proposed Project via culverts adjacent to roadway crossings.

The effects of stormwater, such as scour and erosion, are mitigated through design by the inclusion or restoration of culverts and rip rap of other velocity dissipation devices at the end of culverts. Water quality would not be impacted as a result of the Proposed Project. The existing water crossings would be maintained and channeled around the Proposed Project through culverts adjacent to roadway crossings. The Proposed Project shall be designed to not introduce new sources of pollutants to the Project area. The overall existing background pollutant loadings would not change as a result of the improvements of the Proposed Project. Implementation of the Project-specific WQMP would reduce impacts on water quality.

Groundwater

The Proposed Project is within the Upper Mojave and Lucerne Lake Watershed. In most areas within the Mojave region, streams would flow only after long periods of steady rain, then typically infiltrate to groundwater. The periodicity and intensity of such rain events depends on elevation, but in the lower regions historically floods may only happen in intervals measured in several years to decades.

A groundwater basin is three-dimensional and includes both the surface extent and all of the subsurface fresh water yielding material. Implementation of the Proposed Project would result in an increase in impervious surfaces within the Project site. Impervious surfaces, including paved areas, turbine tower platforms, and building rooftops, decrease the area in which stormwater can infiltrate and recharge local groundwater resources. According to the WQMP, permanent take has been calculated at 91.2 acres (3,972,641 sq. feet). The impervious area is estimated to be 7 acres (304,921 sq. feet), which represents approximately 8% of the total Project area. This represents a very minor percentage of the total area. The Proposed Project would not use groundwater for construction or operation; therefore, no impact is anticipated to groundwater resources or groundwater quality. Implementation of site-specific BMPs would further reduce potential impacts associated with groundwater.

Alternative Access Route 1A

Alternative Access Route 1A is not located within a 100-year floodplain. Construction of Route 1A could potentially impact water quality, sediment, and erosion. Therefore, site-specific BMPs would be implemented to reduce potential impacts.

Alternative Access Route 1B

Environmental impacts are the same as those of Alternative Access Route 1A, see the analysis above. Implementation of site-specific BMPs would reduce potential impacts to erosion and sediment.

Alternative Jasper Substation 1A – Public Land

Substation 1A is not located within a 100-year floodplain. The construction of Substation 1A could introduce a new source of pollutants to the area. Therefore, with implementation of a Project-specific SWPPP, mitigation measures MMHYDRO1 through 8, and BMPs, impacts to water quality would be reduced to less-than-significant levels.

Alternative Jasper Substation 1B – Private Land

Environmental impacts are the same as those of Substation 1A, see the analysis above. Implementation of site-specific mitigation measures and BMPs would reduce potential impacts to erosion and sediment.

Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development, ROW Application Denied, and CUP Not Approved

Under this alternative, BLM would amend the CDCA Plan to determine that the site is suitable for wind energy development, but would deny the ROW application for the Proposed Project, and the County would not approve the CUP for the Proposed Project. The site would remain in its present condition consisting of vacant desert lands, and impacts to hydrology and water quality would not occur.

Alternative 3: Action on Amendment to CDCA Plan Determines Site Unsuitable for Wind Energy Development

Under this alternative, the Project site would be determined unsuitable for wind energy development. This unsuitability determination and its rationale would be reflected in an amendment to the CDCA Plan. Wind energy development projects would not be permitted on public lands within the Project area. Other (non-wind) renewable energy development would be subject to applicable NEPA compliance and the planning process. The Project site would remain in its present condition consisting of vacant desert lands, subject to the area's Multiple Use Class (MUC) provisions of the CDCA Plan. Actions suitable for MUC "limited" use may continue to be authorized in the Project area, subject to NEPA and other pertinent laws and regulations. No environmental consequences associated with construction and operation of the Proposed Project would occur. Needed power for Southern California would be obtained from other local or remote sources.

Alternative 4: No Action on Site Suitability and Proposed Project

Under this alternative, no action would be taken to determine if the Project site is suitable for wind energy development and there would be no amendment to the CDCA Plan. Also under this alternative ("No Project" alternative under CEQA), no action would be taken on the Granite Mountain Wind Energy Project and the Project would not occur. The Project site

would remain in its present condition consisting of vacant desert lands, subject to the area's MUC provisions of the CDCA Plan. Actions suitable for MUC "limited" may continue to be authorized in the Project area, subject to NEPA and other pertinent laws and regulations, including wind generation projects. Other (non-wind) renewable energy development would be subject to applicable NEPA compliance, other pertinent laws and regulations, and the planning process. No environmental consequences associated with construction and operation of the Proposed Project would occur. Needed power for Southern California would be obtained from other local or remote sources.

3.8.5 Avoidance, Minimization, and/or Mitigation Measures

The Proposed Project would implement recommended BLM PEIS BMPs, which were adopted as part of the proposed Wind Energy Development Program to ensure minimal impact to natural and cultural resources. In addition to the BLM BMPs, Project-specific mitigation measures evaluated for their ability to eliminate or reduce the potential substantial adverse impacts related to water quality and hydrology were developed for the Proposed Project.

BLM BEST MANAGEMENT PRACTICES

Construction BMPs

- Operators shall develop a stormwater management plan for the site to ensure compliance with applicable regulations and prevent offsite migration of contaminated stormwater or increased soil erosion.
- Roads shall be designed so that changes to surface water runoff are avoided and erosion is not initiated.
- Access roads shall be located to minimize stream crossings. All structures crossing streams shall be located and constructed so that they do not decrease channel stability or increase water velocity. Operators shall obtain all applicable federal and state permits.
- Existing drainage systems shall not be altered, especially in sensitive areas such as erodible soils or steep slopes. Potential soil erosion shall be controlled at culvert outlets with appropriate structures. Catch basins, roadway ditches, and culverts shall be cleaned and maintained regularly.
- Operators shall gain a clear understanding of the local hydrogeology. Areas of groundwater discharge and recharge and their potential relationships with surface water bodies shall be identified.
- Operators shall avoid creating hydrologic conduits between two aquifers during foundation excavation and other activities.

PROJECT-SPECIFIC MITIGATION MEASURES

MMHYDRO1: Wherever possible, infrastructure associated with the telecommunications lines would be situated outside jurisdictional areas of streams and drainages (e.g., channels and banks). Where the proposed route spans a waterway, structures would be located on nearby land areas, whenever possible, and engineered to withstand stresses associated with their proximity to the waterways.

MMHYDRO2: Avoid areas that do not offer perpetual access to transmission structures for routine operations and maintenance.

MMHYDRO3: Hazardous materials would be used or stored greater an appropriate distance from known or identified natural drainages.

MMHYDRO4: Material Safety Data Sheets would be made available to all site workers for cases of emergency.

MMHYDRO5: The substation and poles would be designed and engineered to facilitate natural drainage patterns and reduce potential impacts to erosion and siltation.

MMHYDRO6: Any disturbed areas associated with temporary construction would be returned to original conditions (to the extent possible) after the completion of Project construction.

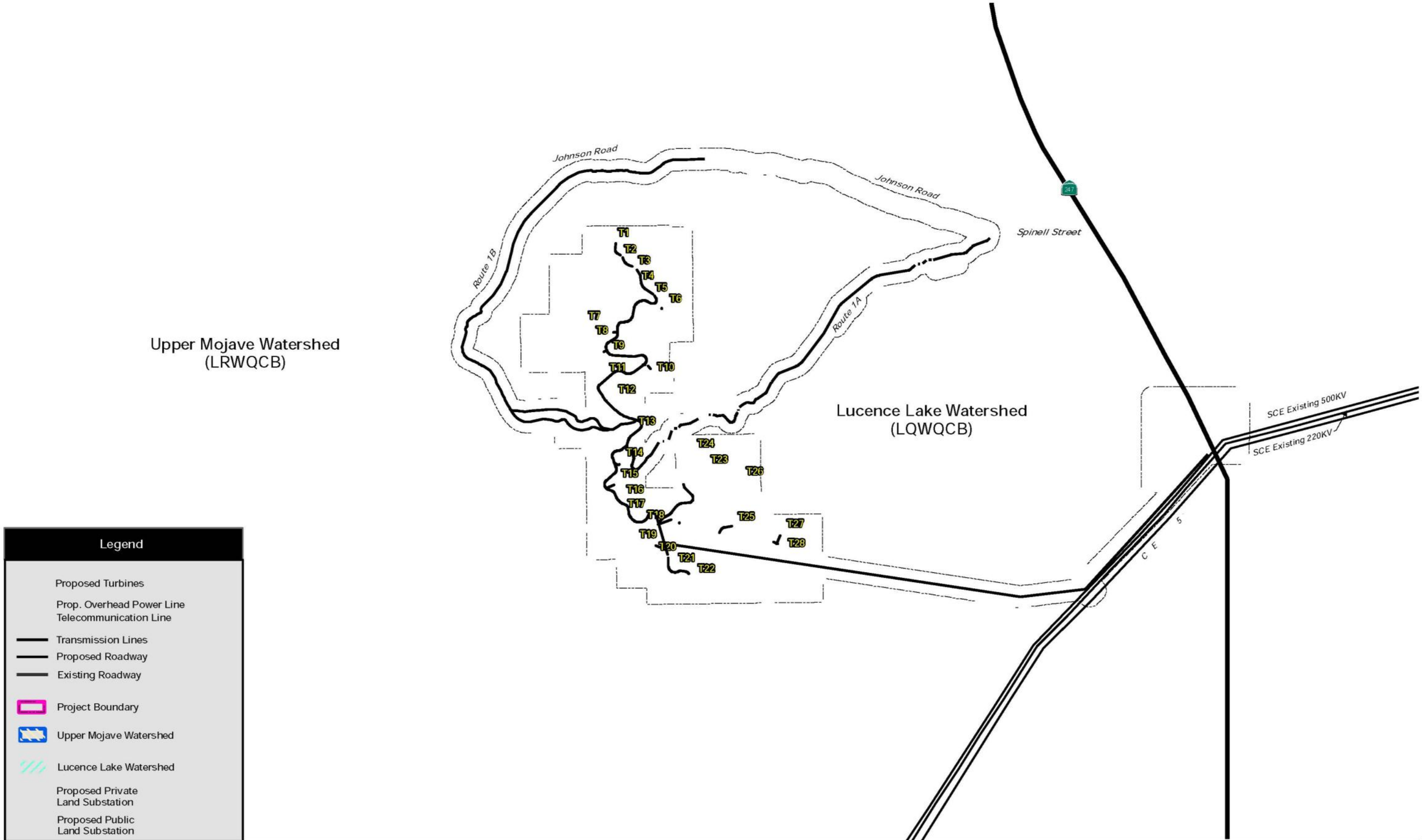
MMHYDRO7: Drainage control features would be installed where appropriate, as well as other stormwater protection measures included as part of the SWPPP.

MMHYDRO8: Stormwater drainage inside the substation fence would be designed to minimize erosion and for sediment control. Drainage control measures would be applied that would discharge surface run-off as close to the existing conditions as possible to prevent erosion of down-slope properties. Final design of the site drainage would be subject to the conditions of the grading permit.

3.8.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented

With implementation of the Project-specific mitigation measures, BLM BMPs, and all required regulations set forth in the regulatory settings of this section, the Proposed Project's potential impacts to hydrology and water quality are not considered substantial.

This page intentionally left blank.



GRANITE MOUNTAIN WIND ENERGY PROJECT
WATERSHED MAP

Figure 3.8-1

This page intentionally left blank.

3.9 LAND USE AND PLANNING

This Land Use and Planning section summarizes applicable federal, state, and local regulations and describes the existing conditions and land uses within the Project area. Potential impacts to land uses as a result of the Proposed Project are determined using the criteria presented below.

3.9.1 Impact Criteria

The potential risk of direct and indirect impacts affecting land use and planning is assessed with respect to three criterions. Potential impacts to land use and planning could occur if reasonably foreseeable future actions were to result in any of the following:

- Conflict with multiple use management of lands administered by the BLM;
- Conflict with applicable General Plan Land Use plans, policies, or regulations of an agency with jurisdiction over the Project;
- Result in proposed uses that are incompatible with existing or adjacent land uses.

3.9.2 Regulatory Setting

The governing laws and applicable management plans for BLM and County lands are detailed in Section 1.7, Compliance with NEPA, CEQA, and Other Applicable Federal and State Laws, Statues, Regulations, Executive Orders, and Plans.

Federal Regulations

Federal Land Policy and Management Act of 1976 (FLPMA)

The FLPMA governs the way in which the BLM manages public lands. In the FLPMA, Congress recognized the value of the public lands, declaring that these lands would remain in public ownership. Congress used the term “multiple use” management, defined as “management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people.” The BLM manages the public land in accordance with this multiple use mandate.

California Desert Conservation Area (CDCA) Plan

The BLM developed the CDCA Plan to “provide for the immediate and future protection and administration of the public lands in the California Desert within the framework of a program of multiple use and sustained yield, and the maintenance of environmental quality.” The Plan was developed in 1980 with various CDCA Plan amendments approved between 1981 and 1998 incorporated in the 1999 CDCA Plan rewrite. The most recent amendment covering the area of potential effect was the West Mojave Plan (WMP), approved in 2006. The primary goal of the CDCA Plan is to “provide for the use of the public lands and resources of the CDCA Plan, including economic, educational, scientific, and recreational uses, in a manner which enhances, wherever possible and, which does not diminish, on balance the environment, cultural, and aesthetic values of the Desert and its future productivity.” The plan seeks to balance multiple uses, sustained yield, and overall environmental quality in the management of public lands covered within the CDCA.

Specific goals and objectives address alternative energy development in the *Energy Production and Utility Corridors* element of the CDCA Plan. Goal three of this element is to “Identify potential sites for geothermal, wind energy parks and power plants.” Objectives

include the development of a comprehensive wind-energy data acquisition program for the CDCA Plan. Plan amendment procedures are to provide for the coordination needed for ensuring rapid implementation of these important fuel-replacement alternative energy programs in an environmentally sound manner,

BLM Wind Energy Final Programmatic EIS

An Interim Wind Energy Development Policy (BLM, 2002) was developed, in part, in response to the National Energy Policy recommendation that the Departments of the Interior, Energy, Agriculture, and Defense work together to increase renewable energy production (NEPDG, 2001). BLM created the interim policy by establishing a Wind Energy Development Program. The establishment of this policy, particularly with respect to its planning elements, constituted a major federal action as defined by NEPA, under BLM's planning regulations at 43 CFR Part 1600, and thus required the preparation of an EIS. The *Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States* (PEIS) was prepared by the BLM in June 2005. A Record of Decision approving the implementation of this policy and associated land-use plan amendments was published in the *Federal Register* on January 11, 2006. An updated policy for wind energy development was issued in late 2008 (WOIM, 2009-0043).

State Regulations

California Public Utility Commission General Order No. 131-D

The California Public Utility Commission (CPUC) General Order (GO) No. 131-D, Section XI B clarifies that "Local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the Commission's jurisdiction. However in locating such projects, the public utilities shall consult with local agencies regarding land use 106 matters." Due to this GO, the public utilities are directed to consider local regulations and consult with local agencies, but the County and city regulations are not applicable because the County and cities do not have jurisdiction over SCE's components of the Project, as they are exempt from local land use and zoning regulations and discretionary permitting. However, CPUC GO No. 131-D applies to this Project. GO 131-D Section III C requires "the utility to communicate with, and obtain the input of local authorities regarding land use matters and obtain any nondiscretionary local permits."

Local Regulations

County of San Bernardino 2007 General Plan

The San Bernardino County General Plan governs land use planning and development decisions within the County. Issues identified in the General Plan span the County's jurisdiction and non-jurisdiction (federal lands managed by the BLM). Though the County does not have jurisdiction over the federal lands managed by the BLM, under FLPMA and BLM regulations at 43 CFR Part 1600, BLM must coordinate its planning efforts with state and local planning initiatives. The General Plan includes the development of land use polices and land use maps to guide future development in the County. The Proposed Project is located partially within the Lucerne Valley Community Plan of the San Bernardino County General Plan.

The Project site is primarily designated as Resource Conservation (RC) with a small portion designated as Rural Living (RL). The RC Land Use Zone District "provides sites for open

space and recreational activities, single-family homes on very large parcels and similar and compatible uses" (San Bernardino County, 2007, Table LU-1) and "establishes areas where open space and non-agricultural activities are the primary use of the land, but where agriculture and compatible uses may co-exist." Wind energy projects within either the RC or RL zones require a Conditional Use Permit (CUP) to be approved by the County (San Bernardino County, 2007B). The RL Land Use Zone District "provide[s] sites for rural residential uses, incidental agricultural uses, and similar and compatible uses."

The General Plan establishes four Air Safety Review Areas (ARs) within the County. These areas are designated as AR1, AR2, AR3, and AR4. AR1 is the most restrictive and the least compatible with wind energy development. The Proposed Project is located in AR4, which is the least restrictive toward wind energy development.

Apple Valley General Plan

The Apple Valley General Plan governs land use planning for residential, commercial, industrial, open space, and other land uses decisions within the sphere of influence of the Town of Apple Valley. The General Plan contains goals, policies, and objectives based on an assessment of current and future needs and available resources in Apple Valley. Apple Valley's current General Plan was adopted in 1991, updated in 1998, with a Housing Element update following in 2000. An update of the General Plan began in 2007, and Section II of the Draft General Plan is currently available for public review. Section II includes the Land Use, Circulation, Parks and Recreation, and Housing Elements and contains goals, policies, and implementation actions pertaining to each topic.

Apple Valley Draft Comprehensive Airport Land Use Compatibility Plan

Apple Valley Draft Comprehensive Airport Land Use Compatibility Plan establishes two safety zones: the Airport Master Plan Area and the Airport Overlay Districts A-1 and A-2 to protect public safety. This plan has been developed by the Town of Apple Valley to be consistent with other land uses in the area. Legal authority lies with the Town of Apple Valley and San Bernardino County planning managers, but the comments of the Airport Manager shall be considered prior to any project approval.

United States Air Force AICUZ Program Manager's Guide

Edwards Air Force Base Air Installation Compatible Use Zones (AICUZ) Study is intended to protect community health and safety and promote appropriate development in the area of the military airfields. Compatibility zones limit the types and height of facilities constructed within the zones to avoid potential impacts to air traffic and public safety. Compatibility zones have been established for both Edwards Air Force Base and the Apple Valley Airport.

3.9.3 Affected Environment

The Project site is located within the Granite Mountains and surrounded by lands that are mostly undeveloped and sparsely populated. Recreational activities that occur on Granite Mountain include hunting and the use of trails for equestrian, bicycle, hiking, and OHV activities. The Project site does not include established recreation areas or trails; however, casual recreational activities occur on-site. Immediately to the north of the Project site, an Area of Critical Environmental Concern (ACEC) has been established for Bendire's Thrasher (*Toxostoma bendirei*). See Section 3.4 *Biological Resources* for further details on Bendire's Thrasher. A portion of the main access road falls within the ACEC, but no WTGs are planned within the ACEC.

The Project site is located approximately 14 miles east of Victorville, between the Town of Apple Valley and the community of Lucerne Valley in San Bernardino County, California. The nearest residence is 1.5 miles west from the Proposed Project. These rural communities comprise a significant number of large lots. Historical land uses in the surrounding area have included mining, quarrying, ranching, and agriculture, with an increase in residential land use following World War II (Town of Apple Valley, undated). Both communities seek to maintain a rural environment and equestrian lifestyle (Town of Apple Valley, undated; Lucerne Valley, 2007).

Airports in the surrounding area include Southern California Logistics Airport and the Apple Valley Airport. The Southern California Logistics Airport is located in the northern section of the city of Victorville and approximately 19 miles from the Project site. The Apple Valley Airport is located north of the town of Apple Valley and 8.28 miles from the Project site. The Proposed Project is outside of the compatibility zones established for both Southern California Logistics Airport and the Apple Valley Airport. The County General Plan has designated the Project area as Air Safety Review Area 4 (AR4).

The Project site is located between two military installations: Edwards Air Force Base (AFB) and the Marine Corps Air Ground Combat Center (MCAGCC) in Twentynine Palms. Edwards AFB is located on approximately 301,000 acres in the Antelope Valley in Southern California and lies in the western Mojave Desert in portions of Kern, Los Angeles, and San Bernardino Counties. Edwards AFB is approximately 90 miles northwest of San Bernardino and over 50 miles from the Project site. The MCAGCC occupies approximately 596,000 acres of the southern Mojave Desert in San Bernardino County and is located approximately 56 miles southeast of the Project site.

The Project site includes land designated as Multiple Use Limited (Class L) and land designated as Unclassified within the BLM CDCA Plan (see **Figure 3.9-1**, *BLM Land Use Map*). The CDCA Plan describes Multiple Use Class L for Limited Use and protects sensitive, natural, scenic, ecological, and cultural resource values. Public lands designated as Class L are managed to provide for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished. Land uses that are not allowed include agriculture, hazardous waste disposal, and intensive recreational use, including motor vehicles. Allowable uses include wind and geothermal energy, subject to NEPA requirements, new electrical transmission lines, cables for interstate communication, new communication sites, livestock grazing subject to protection of sensitive resources, and limited mineral extraction and exploration. Unclassified Lands are defined as scattered and isolated parcels of public land in the CDCA that have not been placed within multiple-use classes. These parcels are managed on a case-by-case basis.

Within the County General Plan, the Project site is predominately designated as an RC zone. The proposed Private Land Substation is partially located within the RC zone and the RL zone. **Figure 3.9-2** *San Bernardino County Land Use Map* shows existing land uses in the area of the Proposed Project. The RC zone comprises most (55.98 percent) of the designated land uses in the County. This land use designation covers over one million acres, or about 1,500 square miles of land, most of which are publicly owned (federal and state) and include national parks, military bases, conservation areas, and lands owned by other federal and state agencies. Lands within the RC zone are in areas that are generally distant from urban centers. Existing land uses include limited grazing, passive public and private recreation areas, rural residences and vacation cabins, and watersheds, wildlife, and open space uses. Lands in the RC zone generally have steep terrain and limited access,

and erosion is a primary concern. Wind energy projects within the RC zone are subject to a CUP issued by the County (San Bernardino County, 2007B).

RL zones consist of areas generally adjacent to urbanizing centers, with existing land uses that include limited agriculture; mining and quarrying; energy production operations; public and private recreation areas; rural residences and vacation cabins; and watershed, wildlife, and open space uses. Approximately 587,535 acres within the County (32.76 percent of total unincorporated area) are designated RL.

In addition, the Project site is designated AR4 in the General Plan, which is the least restrictive toward wind energy development.

3.9.4 Environmental Consequences

This section discusses the applicability of the regulations contained in Section 3.9.2, *Regulatory Setting* on each Project alternative. Mitigation measures for any impacts to land use are included in Section 3.9.5 *Avoidance, Minimization, and/or Mitigation Measures*.

Alternative 1: Proposed Project

Alternative 1, the Proposed Project, would include the installation of up to 28 2.3-MW WTGs. Twenty (20) WTGs are proposed on federal lands administered by the BLM, and eight WTGs are proposed on leased private lands immediately adjacent. The Proposed Project would also require the construction of a new access road, a Project substation, overhead transmission line, interconnection to the SCE 220-kV transmission system, an O&M building, a temporary office, and temporary staging areas. Acreages for each component of the Proposed Project are provided in Table 2-1 contained in Chapter 2 of this DEIS/EIR. Alternative 1 includes two alternatives for the new access road and two Project substation alternatives.

The 2,756-acre Project site includes 2,086 acres of undeveloped land administered by the BLM and 670 acres of privately-owned land. Depending on the access road and substation alternatives chosen, the total area of anticipated impact would range between 217.3 acres and 229.7 acres. Of the total area disturbed, 91.2 acres to 109.3 acres would be permanently disturbed, and 108.9 acres to 110.9 acres would experience temporary disturbance. Refer to Table 2-1 in Chapter 2 for a detailed breakdown of the number of acres temporarily and permanently disturbed.

Alternative 1 is subject to the land use plans, policies, and regulations of the BLM and the County of San Bernardino, which are listed and described in Section 3.9.2, *Regulatory Setting*. General consistency with applicable plans, policies, and regulations are provided in the summary discussion below. Road and substation alternatives consistency are analyzed separately. A full assessment of the Project consistency with policies of the CDCA Plan, General Plan, and Southern California Association of Governments (SCAG) is provided in Appendix L.

CDCA Plan

Alternative 1 is consistent with the Multiple Use Class L and unclassified land, which allows the development of wind energy projects. The Proposed Project would incorporate the appropriate BMPs for wind energy development detailed in the *Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States* and Record of Decision (BLM, 2005).

BLM ACEC

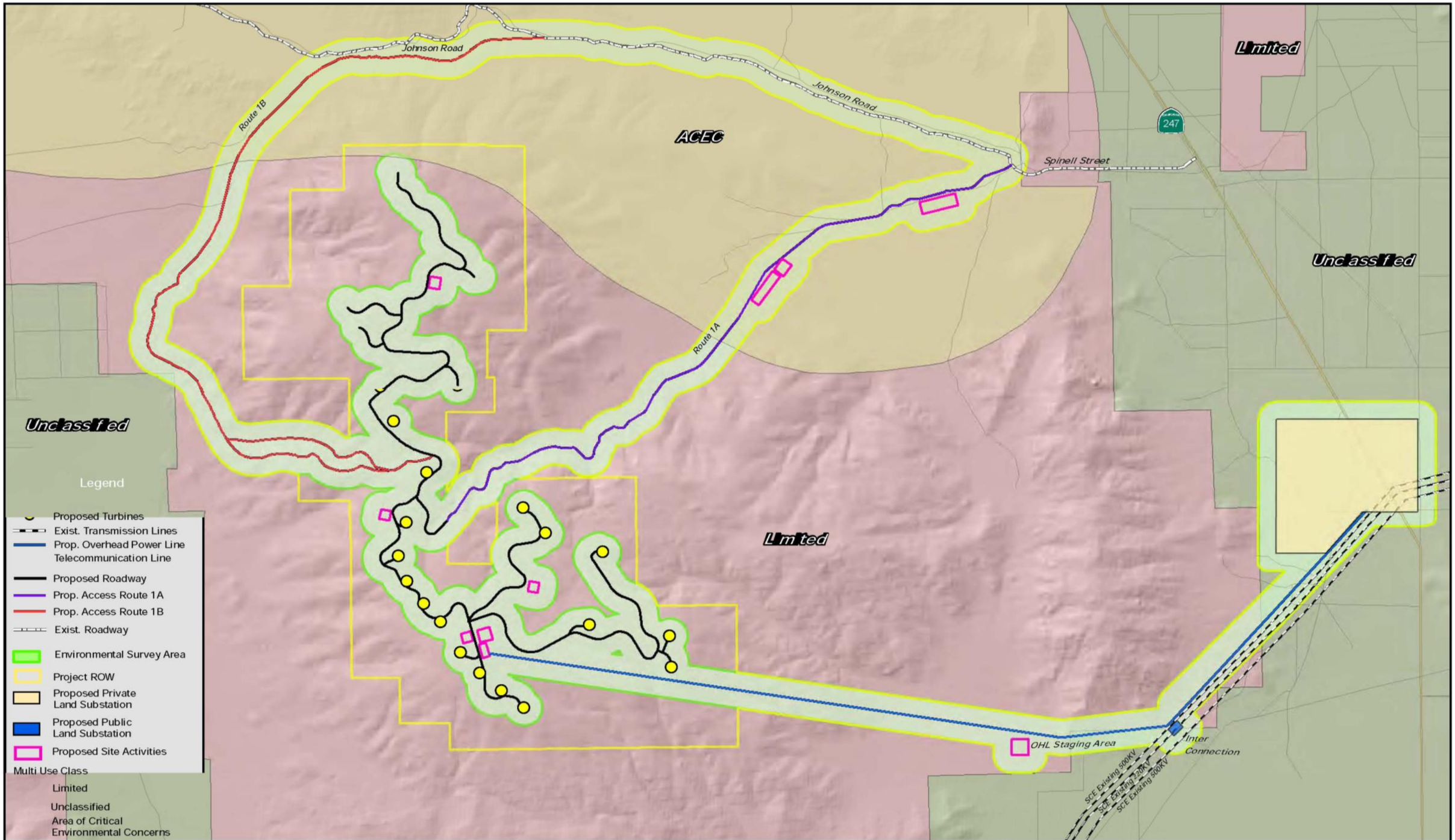
Wind energy development is not considered to be a compatible use within an ACEC. Alternative 1 would not construct WTGs within the ACEC for Bendire's Thrasher (Toxostoma bendirei) as identified in the CDCA Plan. The nearest WTG (T1) is approximately 400 feet south of the ACEC boundary.

San Bernardino County General Plan

Alternative 1 is consistent with the regulations of the RC and RL Land Use Zone Districts, which allow wind energy projects with the approval of a CUP.

Airport Compatibility

Alternative 1 is located between Edwards AFB and the MCAGCC military installations and is not within BLM-designated low-level military training routes. Alternative 1 does not conflict with existing Airport Comprehensive Land Use Plans (ACLUP) or compatibility zones established for the Southern California Logistics Airport and the Apple Valley Airport. An aeronautical study has been prepared in accordance with Federal Aviation Regulations Part 77, and a No Hazard Determination has been issued for each proposed WTG (Appendix L). Since the FAA is required to coordinate with the military and local airport authorities as part of this process, and no issue was raised, the Proposed Project is not expected to conflict with the existing military installations or airports.



Sources: Southern California Edison, Granite Mountain Wind Energy Project Plan of Development 2009, BLM CDCA 1980.

0 0.5 1 Miles

GRANITE MOUNTAIN WIND ENERGY PROJECT
CDCA LAND USE PLAN

Figure 3.9-1

Sources: County of San Bernardino, Southern California Edison, Granite Mountain Wind Energy Project Plan of Development 2009

0 0.5 1 Miles

GRANITE MOUNTAIN WIND ENERGY PROJECT
SAN BERNARDINO COUNTY GENERAL PLAN LAND USE PLAN

Figure 3.9-2

Southern California Association of Governments

SCAG's regional plans that require a consistency discussion are the RCPG, RTP, and CGV administered by SCAG. A consistency analysis for the Proposed Project with policies of the SCAG regional plans is provided in Appendix L, Consistency with *Regional Comprehensive Plan and Guide Policies*. The analysis contained in the Consistency Table concludes that the Proposed Project would be consistent with SCAG's polices.

Implementation of Alternative 1 would not conflict with the CDCA Plan, the San Bernardino General Plan, or SCAG plans and policies. Potential conflicts may occur with the BLM ACEC and with the Airport Land Use Plans for Edwards AFB and Apple Valley Airport. However, Project impacts are expected to be less than significant. Implementation of appropriate BMPs and adherence to applicable federal regulations would ensure that the Proposed Project would not have a significant effect on land use. Therefore, Alternative 1 is not expected to result in proposed uses that would be incompatible with existing or adjacent land uses.

Alternative Access Route 1A

Alternative Access Route 1A would traverse through a portion of the Bendire's Thrasher ACEC located north of the Project site. The portion through the ACEC would be partially on existing BLM Route Number 2674 and 2672. The newly constructed portion of Route 1A would be developed pursuant to regulations or approved plans of operation according to general guidelines contained in the CDCA Plan. Potential adverse impacts would be mitigated by Mitigation Measure MMBIO44. Additional mitigation measures are included and discussed in Section 3.4 *Biological Resources*.

Alternative Access Route 1B

Alternative Access Route 1B passes through the Bendire's Thrasher ACEC; however, the portion of the route that traverses through the ACEC is an existing BLM travel route. Potential adverse impacts would be mitigated by Mitigation Measure MMBIO44. Additional mitigation measures are included and discussed in Section 3.4 *Biological Resources*.

Alternative Jasper Substation 1A – Public Land

Substation 1A is not located within an ACEC and is consistent with all applicable plans and land uses. Therefore, no additional impacts are anticipated beyond the acreages of temporary and long-term disturbance discussed above.

Alternative Jasper Substation 1B – Private Land

Substation 1B is not located within an ACEC. The substation is located on land designated RC and RL in the San Bernardino County General Plan and is consistent with the both designations. Thus, Substation 1B is consistent with all applicable plans and land uses, and no additional impacts are anticipated beyond the acreages of temporary and long-term disturbance discussed above

Implementation Alternative 1 would not conflict with the CDCA Plan, the San Bernardino General Plan, or SCAG plans and policies. Potential conflicts may occur with the BLM ACEC. However, potential adverse impacts are expected to be reduced by adhering to applicable federal regulations and with the implementation of appropriate BMPs and mitigation measures. Therefore, the Alternative 1 is not expected to result in proposed uses that would be incompatible with existing or adjacent land uses.

Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development, ROW Application Denied, and CUP Not Approved

Under this alternative, BLM would amend the CDCA Plan to determine that the site is suitable for wind energy development, but would deny the ROW application for the Proposed Project, and the County would not approve the CUP for the Proposed Project. Other wind energy development applications can be submitted for the Project site; however, individual ROW and CUP applications would be reviewed and analyzed separately as required.

Alternative 3: Action on Amendment to CDCA Plan Determines Site Unsuitable for Wind Energy Development and Proposed Project Is Not Approved

Under Alternative 3, from the planning standpoint, the Project site would be determined unsuitable for wind energy development and would remain undeveloped. No changes to current land use in the area would occur. The Project site is currently compatible with existing and adjacent uses and with applicable land use and management plans. Allowing the Project site to remain in its current condition does not have the potential to conflict with applicable land use plans, policies, or regulations; to conflict with multiple use management of lands administered by the BLM; or result in uses that are incompatible with existing or adjacent uses of land. Therefore, no potential adverse impacts on land use or planning would occur as a result of this alternative.

Alternative 4: No Action on Site Suitability and Proposed Project Is Not Approved

Under the No Action Alternative, no change would occur to the applicable CDCA Plan decisions, the Project would not be built, and Project site would remain undeveloped. Current land use in the area would not change. The Project site is currently compatible with existing and adjacent uses and with applicable land use and management plans. Therefore, this alternative does not have the potential to conflict with applicable land use plans, policies, or regulations; to conflict with multiple use management of lands administered by the BLM; or result in uses that are incompatible with existing or adjacent uses of land.

3.9.5 Avoidance, Minimization, and/or Mitigation Measures

The Proposed Project would implement recommended BLM PEIS BMPs, which were adopted as part of the proposed Wind Energy Development Program to ensure minimal impact to natural and cultural resources. In addition to the BLM BMPs, Project-specific mitigation measures evaluated for their ability to eliminate or reduce the potential substantial adverse impacts related to land use were developed for the Proposed Project.

BLM BEST MANAGEMENT PRACTICES

Construction BMPs

- The area disturbed by construction and operation of a wind energy development project (i.e., footprint) shall be kept to a minimum.
- The number and size/length of roads, temporary fences, lay-down areas, and borrow areas shall be minimized.

3.9.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented

With implementation of the above-listed BMPs, as well as mitigation measures set forth in the Air Quality, Biological Resources, Noise, and Visual Resources sections of this DEIR/EIS, the Proposed Project would not result in potential adverse impacts related to plan consistency and land use planning.

This page intentionally left blank.

3.10 RECREATION

This section describes the recreational opportunities available in and around the Project area and describes the impacts to these opportunities as a result of the alternatives.

3.10.1 Impact Criteria

Under CEQA, potential impacts to recreation could occur if reasonably foreseeable future actions were to result in either of the following:

- Diminish the enjoyment of existing recreational opportunities; or
- Increase the use of neighborhood and regional parks or other recreational facilities such that the facility would substantially deteriorate or that deterioration would be accelerated.

These criteria were applied to conclusions regarding impacts under NEPA as well.

3.10.2 Regulatory Settings

(e) The portion of the Project site on BLM-administered land is subject to 43 CFR 8342.1, which requires all public lands to have off-road vehicle designations, which are listed as open, limited, or closed to off-road vehicles. This regulation applies to land use plan decisions that permit, establish conditions, or prohibit off-road vehicle activities on specific areas of public lands.

The Project area is located in San Bernardino County, California, on private lands and lands administered by the BLM. Recreational resources and designations within the Project area are governed by policies contained in the San Bernardino County General Plan and the West Mojave amendment to the CDCA Plan.

Federal Regulations

California Desert Conservation Area Plan (CDCA) – West Mojave Amendment

The CDCA Plan provides for the use of public lands on resources, including economic, educational, scientific, and recreational uses, in a manner that preserves the environmental, cultural, and aesthetic resources of the California Desert. The West Mojave amendment applies to the West Mojave Desert region, within which the Project area is located, and specifies the recreational facilities available within the Project area and the types of recreational activities permitted on BLM-administered lands.

Local Regulations

San Bernardino County General Plan

According to the Circulation Element contained in the San Bernardino County General Plan, trails are an important part of the non-motorized transportation system that currently exists in the County. There are no County-designated trails within the Project area according to the County's open space and trails map.

3.10.3 Affected Environment

The Project area is located within the Granite Mountains of San Bernardino County. Principal recreational activities that occur within the Granite Mountains include OHV touring,

recreational mining, rock climbing, hiking, hunting, and camping. The Granite Mountain region is one of 21 subregions identified for off road vehicle route designation planning purposes within the West Mojave amendment to the CDCA. Approximately 38 miles were designated as open routes in 1985-1987, which allow access by motorized vehicles. Designated OHV and four-wheel drive roads within the Granite Mountains are shown in **Figure 3.10-1**, *Granite Mountain Recreational Resources*. **Figure 3.10-1** also shows hiking and rock climbing areas as noted in the *San Bernardino National Forest and Barstow BLM Areas Map* published by the California Trail Users Coalition.

A variety of designated recreational areas are located within a 10-mile radius of the Project area, which include the Stoddard Valley OHV Recreation Area, the Johnson Valley OHV Area, the Ord Mountain Route Network, Sidewinder Mountain, Quail Spring Recreation Area, and White Horse Mountain. The Stoddard Valley OHV Recreation Area and the Johnson Valley OHV Area are located approximately 10 miles northwest and west, respectively, of the Project area and offer unrestricted OHV recreation, camping, hiking, rock hounding, and wildlife watching. The Ord Mountain Route Network is located approximately 10 miles northeast of the Granite Mountains and links the Stoddard Valley and Johnson Valley OHV Areas. Ord Mountain is accessible to OHVs and motorcycles and offers OHV touring and sightseeing opportunities, recreational mining, camping, hunting/shooting, hiking, and wildlife watching. Sidewinder Mountain, Quail Spring Recreation Area, and White Horse Mountain are located approximately 5 miles north, 4 miles southwest, and 3 miles east, respectively, of the Project area and offer equestrian and hiking trails, shooting/hunting, rock climbing, camping, and wildlife watching. Recreational uses within the Project site are undesignated and include equestrian and hiking trails, camping, shooting/hunting, rock climbing, and wildlife watching.

Currently, three BLM-designated routes provide access to the Project area. Johnson Road (Route Number 2630) is located north of the Proposed Project and runs east-west. Route Numbers 2672 and 2674 are shorter minor routes located east of the Proposed Project. All three routes are four-wheel drive roads and require OHV green stickers for access. In addition, unpermitted and/or undesignated trails provide access to and around the Project area. These trails were created as a result of continued recreational use by the public and are not maintained by the City, County, or the BLM.

3.10.4 Environmental Consequences

Impacts to recreation can occur when existing recreational activities are either precluded or require rerouting around the Proposed Project. Potential impacts to recreational resources in the Project area for each Project alternative are assessed with respect to the goals of the San Bernardino County General Plan and the CDCA Plan, as currently amended.

Alternative 1: Proposed Project

Alternative 1, the Proposed Project, would result in the construction of 28 WTGs with an access route to the facility. Access to the Proposed Project would be via Barstow Road in Lucerne Valley. Alternative 1 includes two alternatives for the access road and two Project substation alternatives. Both alternative access routes would utilize Spinel Street to reach the Project site. Gates are proposed at the Project site to prohibit public use of the roads and access to the Project site. No BLM-designated routes would be gated as a result of this Project. A gate would be installed along the selected access route at the base of the mountain prior to reaching the WTG locations to prohibit vehicular access to the WTGs. Pedestrian access to and through the majority of the Project site would not be impacted.

Both proposed substation alternatives are located to the east of the Project site. One alternative would be located on public land, and one would be located on private land. Security fencing would be installed around the substation to prohibit public access and ensure public safety.

Alternative 1 would not construct WTGs on designated recreation areas. The specific locations of the WTGs are detailed in Chapter 2 of this DEIS/EIR. However, Alternative 1 would include an access route that would utilize portions of BLM-designated OHV roads within the Granite Mountains. Construction of the 28 WTGs, access road, and substation would restrict casual hiking, hunting, rock climbing, equestrian, and camping activities within the Project area. Public access to the Project area would be limited during construction. Once the Proposed Project begins operation, pedestrian access would be allowed throughout the site, with the exception of the substation. However, vehicular access to the WTGs and substation would be prohibited.

Alternative 1 is not expected to draw a larger population of recreational users to the area. Implementation of this alternative is not expected to increase the use of recreational facilities, which could otherwise result in the substantial deterioration of the facilities. Therefore, no potential adverse impacts to recreational facilities are expected.

Alternative Access Route 1A

Alternative Access Route 1A, approximately 4.4 miles long and 40 feet wide, would travel Spinel Street for one mile to BLM Route Number 2674 and 2672. The new road would be constructed where Route Number 2672 terminates to reach the Project site. A gate would be installed along Route 1A on the west side of the base of the mountain prior to reaching the turbine locations (Refer to **Figure 3.10**, *Recreational Resources* Map). Access Route 1A would travel through the ACEC; however, impacts to wildlife, habitat, vegetation, and other resources are considered less than significant with the implementation of Mitigation Measure MMBIO37. Impacts to biological resources and proposed mitigation measures are discussed in Section 3.4, *Biological Resources*. Access Route 1A would be consistent with criteria established in 43 CFR 8342.1 with mitigation incorporated.

Alternative Access Route 1B

Alternative Access Route 1B, approximately 8.7 miles long and 40 feet wide, would travel Spinel Street for one mile to Johnson Road and continue on Johnson for four miles. From Johnson Road, a new road would be constructed southerly toward the Project area. A gate would be installed along Route 1B on the east side of the base of the mountain prior to reaching the turbine locations (Refer to **Figure 3.10**, *Recreational Resources Map*). Access Route 1B would travel through the ACEC; however, the portion of Route 1B that traverses through the ACEC is an existing route. In addition, impacts to wildlife, habitat, vegetation, and other resources are considered less than significant with the implementation of Mitigation Measure MMBIO37. Impacts to biological resources and proposed mitigation measures are discussed in Section 3.4, *Biological Resources*. Access Route 1B would be consistent with criteria established in 43 CFR 8342.1 with mitigation incorporated.

Alternative Interconnect Substation 1A – Public Land

Construction of Substation 1A would not impact recreation. No designated trails within the substation area would be affected. Construction of a substation would not warrant an increase in the use of recreational facilities; therefore, deterioration of such facilities would not occur.

Alternative Interconnect Substation 1B – Private Land

Environmental impacts are the same as those of Substation Alternative 1A, see the analysis above.

Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development, ROW Application Denied, and CUP Not Approved

Under this alternative, BLM would amend the CDCA Plan to determine that the site is suitable for wind energy development, but would deny the ROW application for the Proposed Project, and the County would not approve the CUP for the Proposed Project. The site would remain in its present condition consisting of vacant desert lands, and impacts to existing recreation opportunities or use of recreational facilities would not occur.

Alternative 3: Action on Amendment to CDCA Plan Determines Site Unsuitable for Wind Energy Development

Under Alternative 3, the Project site would be determined unsuitable for wind energy development and the Proposed Project would not be permitted. The Project site would remain vacant. No potential adverse impacts to recreational resources in the Project area would occur. This alternative would not diminish the enjoyment of existing recreation opportunities or increase the use of recreational facilities.

Alternative 4: No Action on Site Suitability and Proposed Project

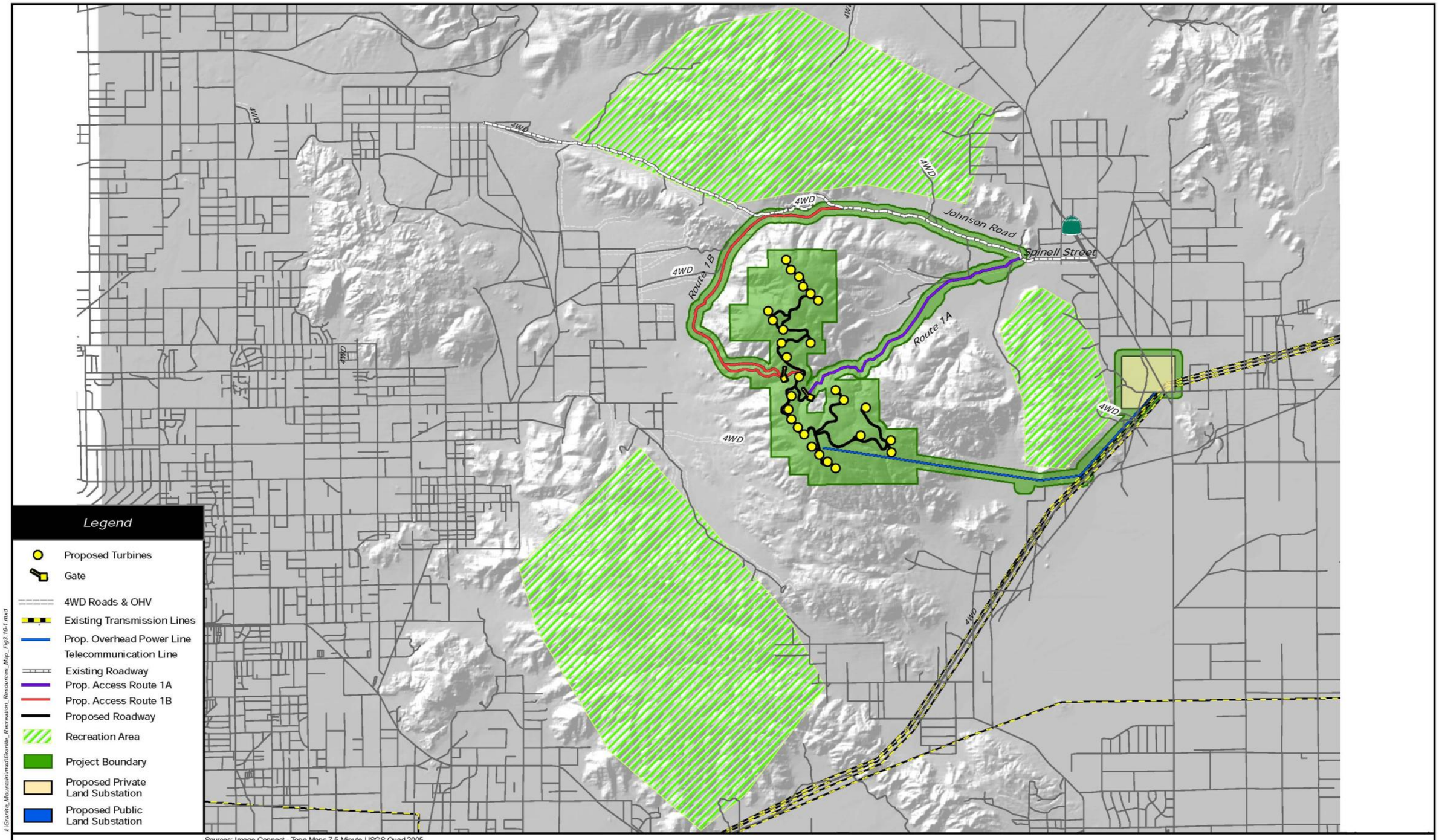
The No Alternative Action assumes that the Proposed Project would not occur and the site would remain in its present condition. Thus, no potential adverse impacts to recreational resources in the Project area would be expected to occur. This alternative does not have the potential to diminish the enjoyment of existing recreational opportunities or increase the use of recreational facilities.

3.10.5 Avoidance, Minimization, and/or Mitigation Measures

The Proposed Project would implement recommended BLM PEIS BMPs, which were adopted as part of the proposed Wind Energy Development Program to ensure minimal impact to natural and cultural resources. However, no BMPs or Project-specific mitigation measures were identified for recreational resources.

3.10.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented

Implementation of the Proposed Project would not significantly impact designated recreational uses to the surrounding communities.



Sources: Image Connect - Topo Maps 7.5 Minute USGS Quad 2005

GRANITE MOUNTAIN WIND ENERGY PROJECT
RECREATIONAL RESOURCES MAP

Figure: 3.10-1

This page intentionally left blank.

3.11 SOCIOECONOMICS

The Socioeconomics section addresses the basic characteristics and resources associated with the human environment, particularly population, demographics, housing, and economic activity. The social and economic context is characterized through indicators of economic conditions (such as employment and income, and economic diversity and stability) as well as fiscal benefits earned for local jurisdictions and markets due to economic activity in the Project area. The study area for social and economic conditions extends beyond the Project area to allow for evaluation of local factors in the immediate vicinity of the Project area and nearby communities. Data have been gathered for the following levels of analysis: the County of San Bernardino, the Barstow-Victorville Census County Division (CCD) area, and Census Tract 121, Block Group 5 are used to present an overview of the existing socioeconomic conditions in and around the Project area.

3.11.1 Impact Criteria

The potential risk of direct and indirect impacts affecting socioeconomics is assessed with respect to three criterions. Potential impacts to socioeconomics could occur if reasonably foreseeable future actions were to result in any of the following:

- Affect expenditures or income within the study area associated with the Project;
- Displace or disrupt businesses;
- Create perceptions of threats or opportunities affecting lifestyles, beliefs, and values about the quality of life in adjacent communities; or
- Cause a decrease in local or study area employment.

3.11.2 Regulatory Setting

Federal Regulations

National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321 et seq.) provides a process for maintaining, protecting, and enhancing the environment. The NEPA process requires federal agencies to disclose the environmental consequences of their decision-making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions. As required by 40 C.F.R. 1508.8 (b) economic and social factors should be analyzed when preparing an EIS (CEQ, 1997).

Local Regulations

San Bernardino County General Plan

GOAL LU 1: The County will have a compatible and harmonious arrangement of land uses by providing a type and mix of functionally well-integrated land uses that are fiscally viable and meet general social and economic needs of the residents.

- **POLICY LU 1.1:** Develop a well-integrated mix of residential, commercial, industrial, and public uses that meet the social and economic needs of the residents in the three geographic regions of the County: Valley, Mountain, and Desert.

GOAL ED 1: The County will have a vibrant and thriving local economy that spans a variety of industries, services, and other sectors.

- **POLICY ED 1.1:** Adopt an incentive program to encourage industrial/commercial development that would produce jobs and reduce the need for certain types of infrastructure or services.
- **POLICY ED 1.2:** Recognize the distinctions between the growth stages of the Valley, Mountain, and Desert Planning Regions in encouraging industrial, office, and professional and local serving employment. The growth stages are: (1) affordable residential with net out-commuting to jobs; (2) emergence of an industrial base; and (3) maturing economy with professional and office jobs orientation.

GOAL ED 10: The County will have a strong and diversified economic base.

- **POLICY ED 10.1:** Encourage a variety of industries to locate in the County, including commercial/professional office uses and "clean," high-technology industries that provide high-skill/high-wage job opportunities.

GOAL ED 18: Promote a growing and skilled labor force.

- **POLICY ED 18.1:** Promote development of a highly skilled labor force within high-wage emerging industries, such as research and development, high technology, manufacturing, and office-oriented occupations.

GOAL ED 20: Identify and attract new employment types/land uses that complement the existing employment clusters and foster long-term economic growth.

- **POLICY ED 20.1:** Expand, through business attraction and local business development, private-sector export activity, whether manufacturing, high-value services, transportation and logistics, high-tech, or similar higher-paying industry clusters.

3.11.3 Affected Environment

The social and economic conditions are characterized by the needs, demands, and values of the local and regional community, as well as the economic opportunities, benefits, and constraints. The demand on public services and utilities are discussed in Sections 3.11.4 and 3.11.5.

Demographic Characteristics

Much of the demographic data presented in this report was derived from the 2000 U.S. Census Bureau. The County's General Plan (2007) was also used to obtain specific information related to housing and demographics. Socioeconomic data for the affected population is based on the smallest U.S. Census Bureau geographic scale in which data are reported at the Census block group (BG) level. Census BGs are geographic subdivisions of census tracts; their primary purpose is to provide a geographic summary unit for census block data. A block group must comprise a reasonably compact and contiguous cluster of census blocks. Each census tract contains a minimum of 1 BG and may have a maximum of 9 BGs.

As shown in **Figure 3.11-1**, the Proposed Project lies within three BGs: 2, 5, and 6. The Project area BG is populated by residents who are more affluent and less racially diverse than the County and CCD area. CCDs are geographic statistical subdivisions of counties established cooperatively by the Census Bureau and officials of state and local governments in states where minor civil divisions (MCDs) either do not exist or are unsatisfactory for census purposes. The Project area is sparsely populated with rural residential and the amount of socioeconomic data was limited, compared with the level of information that was available for the County of San Bernardino, community of Lucerne Valley, and the Town of Apple Valley.

Table 3.11-A shows selected demographic data for the Project area, the Barstow-Victorville CCD area, and San Bernardino County. Overall, the demographic data indicate that the Project Area is sparsely populated (4,112) and rural, representing about 0.24 percent of the total county population. On average, these residents are relatively older (44 years of age versus 30 years of age, respectively) compared to the County.

Table 3.11-A: Demographic Profile

CATEGORY	COUNTY OF SAN BERNARDINO	BARSTOW-VICTORVILLE CCD	CT 121 BG 5	CT 121 BG 2	CT 121 BG 6
Population	1,709,434	285,337	2,579	152	1,381
Gender					
Male	50%	50%	50%	55%	50%
Female	50%	50%	50%	45%	50%
Age					
Under 18 years	32%	32%	26%	25%	28%
18-24	10%	8%	6%	10%	5%
25-44	30%	27%	25%	20%	25%
45-59	16%	16%	21%	21%	22%
60-over	11%	15%	21%	24%	20%
Median Household Income	$35,730	$31,120	$15,536	$40,000	$31,591
Housing Units	601,369	105,236	1,188	74	715
Vacancy Rate	12%	10%	17%	22%	26%
Owner Occupied Units	57%	62%	70%	72%	63%
Renter Occupied Units	31%	28%	13%	27%	37%
Person per Household	3.15	2.97	2.62	2.62	2.61
Median Rent	648	581	490	492	493
Median Housing Value	$131,500	$99,500	$88,300	$79,200	$69,300
Year Housing Unit was Built					
1990-2000	17%	25%	5%	18%	6%
1980-1989	27%	36%	22%	25%	30%
1970-1979	20%	16%	32%	18%	26%
1960-1969	14%	10%	21%	28%	12%
1950-1959	13%	8%	13%	5%	18%
1940-1949	5%	3%	3%	5%	3%
1939-earlier	4%	2%	1%	0	5%
Unemployment Rate	4.9%	5.5%	12%	7.2%	12%
Occupation	661,272	101,564	460	59	434
Management, Professional, & Related Occupation	28%	25%	19%	27%	27%
Service Occupation	8%	8%	5%	6.7%	16%

CATEGORY	COUNTY OF SAN BERNARDINO	BARSTOW-VICTORVILLE CCD	CT 121 BG 5	CT 121 BG 2	CT 121 BG 6
Sales & Office Occupations	27%	27%	37%	25%	19%
Farming, Fishing, & Forestry Occupation	.5%	4%	0%	0%	5%
Construction, Extraction, and Maintenance Occupation	11%	15%	3%	41%	20%
Production, Transportation, & Material Moving Occupations	17%	17%	16%	0%	14%

Source: 2000 U.S. Census Bureau, Summary File 1 and 3.

The number of households in the Project area in 2000 was 1,977, about 0.3 percent of the 601,369 households in San Bernardino County. Residents of the Project area are about evenly divided between female and male (49% v. 50%, respectively). The County population is 50 percent female and 50 percent male. Based on the 2000 U.S. Census data, the median household size for residents of the Project area was significantly smaller than that of the County (2.61 people v. 3.15 people, respectively). Median household income in the Project area was less than that of the County ($15,536 v. $35,730, respectively). However, the per capita income was about equal for residents of the Project area and the county due to the smaller household size for the Project area.

A significant proportion of the housing units within the Project area are owner-occupied (70%), compared to 57 percent reported for the County. The median home value in the Project area as reported in the 2000 U.S. Census was $69,300, compared to $131,500 for the County. Significant housing appreciation was experienced throughout the County during the 2000-2005 period. However, the relative housing values for the Project area have likely been maintained.

Economic Characteristics

Economic characteristics in this section focus on the economic base and structure of the local economy, which includes the Town of Apple Valley and the community of Lucerne Valley, and provide key indicators on the distribution of employment, income, and business trends in the area and County.

Lucerne Valley is a mining/agricultural-based community, with Mitsubishi Cement Corporation, Specialty Minerals (formerly Pfizer), and OMYA (formerly Pluess-Staufer) as its major mining industry companies operating on the north face of the San Bernardino Mountain range. Lucerne Valley also has a state-sponsored water reclamation project, where treated wastewater from Big Bear and Holcomb Valley is transported via pipeline and used to irrigate alfalfa farms on the eastern edge of the valley.

Apple Valley provides many services and employment opportunities to its residents and surrounding communities. The Town has become a key regional center for advanced health care systems, which include St. Mary's Medical Center and Desert Valley Medical Group. Other major employers in the Town of Apple Valley are: Apple Valley Christian Centers, Stater Bros. Market, Bear Valley Fabricators, Merrill Gardens, Steel Supply, Inc., and a Wal-Mart distribution center.

In 2008, the County of San Bernardino's revenue base increased slightly from 2007 (see Table 3.11-B, San Bernardino County Revenue 2008).

Table 3.11-B: San Bernardino County Revenue, 2008

REVENUE	2008	2007	% CHANGE
Program Revenue	2,192,848	2,215,651	-1%
General Revenue			
Property Taxes	550,870	495,333	1.1%
Public Safety Tax	147,794	150,903	-2%
Other Taxes	70,697	90,107	-21.5
Unrestricted Revenues	94,341	90,674	4%
Miscellaneous	81,796	86,857	-5.8%
TOTAL	**3,138,346**	**3,129,525**	**.28%**

Source: County of San Bernardino, Popular Annual Financial Report 2008.

Earnings of persons employed in San Bernardino increased from $35,570,990 in 2005 to $37,595,083 in 2006, an increase of 5.7 percent. The 2005-2006 state change was 5.6 percent, and the national change was 5.7 percent. The average annual growth rate from the 1996 estimate of $18,001,285 to the 2006 estimate was 7.6 percent. The average annual growth rate was 6.2 percent for the state and 5.5 percent for the nation (USBEA, 2008). However, the unemployment rate in the Project area is considerably higher compared to the County average.

Compared with all residents of the County, the Project area residents are employed more often in sale and office occupations (37% v. 27%, respectively) and management-professional occupations (19% v. 28%, respectively). The Barstow-Victorville CCD area residents are more likely to be employed in management and professional positions than the Project area residents (25% v.19%, respectively).

3.11.4 Environmental Consequences

Economic impacts are defined as expected gains or losses from market transactions on local jobs and income and market and non-market value of resources to users. Social impacts are defined as the consequences to human populations that alter the way in which people live, work, recreate, relate to one another, organize to meet their needs, and generally cope as members of society. Social impacts also include cultural impacts involving changes to the norms, values, and beliefs that guide and rationalize their cognition of themselves and their society (Interorganizational Committee on Principles and Guidelines).

Key economic impact variables that were considered as part of the analysis include employment, income, economic dependency, and market and non-market economic value of resources to users within the social and economic study area and at the regional and national levels. Key social impact variables include population change, community and institutional structures, political and social resources, community and family changes, and community resources.

Alternative 1: Proposed Project

The Project area is characterized by its desert landscape, natural resources, scenic vistas, and rural communities. Specific concerns from the community include potential effects to property values and temporary or permanent population growth.

An Economic and Fiscal report was prepared by Granite Wind LLC for the Proposed Project (see Appendix M). The report shows that the Proposed Project would contribute revenues

to the Town of Apple Valley, Lucerne Valley, Victorville, Adelanto, and the County of San Bernardino during its development, construction, and operational phases. Revenues from the Project area anticipated to last at least 20 years. Decommissioning of the Proposed Project would cost nothing to the public.

The Proposed Project is anticipated to contribute 80 to 100 temporary construction jobs, with a large portion hired locally if skills are available; 5 to 8 direct permanent jobs; and 7 to 12 indirect permanent jobs to the economy. It would be expected that these jobs could be filled from the local labor force. That is approximately 0.04% of the General Plan 2030 employment projections.[11] This small amount is not enough to impact growth and/or the existing housing market. Construction is expected to be short term and, therefore, would not cause a population increase. Any temporary increase would be a beneficial effect to the local economy. Construction workers from outside the area would likely stay in hotels or motels. These hotels or motels, along with related business, would receive the financial benefit from these temporary workers. Annual revenue to the local economy is estimated to range between $680,000 and $1,060,000. That is approximately 22% to 34% of the County's total revenue. Table 3.11-C provides a breakdown of the Project's expenditures for operations and maintenance.

Table 3.11-C: Expenditures for O & M

ITEM	ANNUAL COST TO PROJECT	EXPECTED REVENUE TO LOCAL ECONOMY	% OF COUNTY'S TOTAL REVENUE
Technician & Staff	$360,000 -$470,000	$250,000 -$470,000	8%-15%
Maintenance & Security	$75,000	$75,000	2%
Project Administration	$175,000	$125,000	4%
Vehicle Maintenance/fuel	$45,000-$65,000	$45,000-$65,000	1%-2%
Tools, Parts, Supplies	$100,000-$120,000	$65,000-$95,000	2%-3%
Electrical, Civil Contractors	$30,000-$70,000	$15,000-$70,000	.5%-2%
Computer and Data Services	$20,000	$20,000	.6%
Heavy Equipment Rental	$30,000-$40,000	$10,000-$40,000	.3%-1%
Insurance	$350,000-$450,000	$25,000-$50,000	.8%-2%
Land Rent (BLM & Private)	$330,000	$50,000	2%
TOTAL		**$680,000-$1,060,000**	**22%- 34%**

Source: Table 7, Economic & Fiscal Report for Granite Mountain Wind Energy Project, July 2007 (Appendix M).

This operation and maintenance of the Proposed Project would not require a substantial demand on water, sewer, natural gas, storm drain, television, or other services that are common to commercial or industrial development. The Proposed Project would require electrical service and telephone lines. Construction may require minimal amounts of water, and public safety services may be required. A detailed analysis of the effects the Proposed Project would have on public services and utility services is discussed in Sections 3.11.4 and 3.11.5.

The community has expressed concerns regarding potential effects on adjacent property values from the Proposed Project. It is difficult to generalize about the effects of the Proposed Project on property values. Typically, there is a project-related connection that

[11] San Bernardino County General Plan 2007. Appendix C, *2030 Growth Projections- Background Information*, Table 4.

either affects property values directly or is seen by buyers or sellers of the adjacent properties as influencing values as to whether the project does have an effect or not. Not many specific local studies have been prepared to assess the actual effects on adjacent property values associated with wind energy developments. A 2003 Renewable Energy Policy Project (REPP) study of the effects of wind development on property values found no statistical effects of changes on property values. The study found that no major pre-post differences in property value changes occurred within a 5-mile area around the wind energy projects. Another study, prepared by the Berkeley National Laboratory (2009), found no evidence that home prices surrounding wind facilities are consistently, measurably, and significantly affected by either the view of wind facilities or the distance of the home to those facilities.

Social concerns and perceptions of the Proposed Project are diverse. Negative perceptions include a permanent change to the natural desert landscape, wildlife, scenic vistas, and potential effects to populations and property values. Positive perceptions include the use of sustainable renewable energy development and economic opportunities to the surrounding communities. The Proposed Project would provide zero-emission electricity to the regional electrical grid. The development of the Proposed Project would provide temporary construction jobs and benefits to incomes and employment. Over the life of the Proposed Project, permanent jobs would be provided, as well as tax revenues to the local, regional, and state economy. Taxes paid annually would be beneficial to the local communities and would help sustain public services, providing residents with long-term benefits.

Alternative Access Route 1A

Effects to socioeconomics as a result of the alternative access routes are expected to be less than significant. The access routes are intended to reduce specific environmental effects by rerouting or reducing access roads, none of which would substantially affect social and economic stability.

Alternative Access Route 1B

Effects would be the same as those of Alternative Access Route 1A. See the discussion above.

Alternative Jasper Substation 1A – Public Land

Construction and operation of Substation 1A would not impact socioeconomics. Construction of such would not increase employment or growth in the Project area.

Alternative Jasper Substation 1B – Private Land

Construction and operation of Substation 1B would not substantially affect socioeconomics. Construction of such would not increase employment or growth in the Project area.

Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development, ROW Application Denied, and CUP Not Approved

Under this alternative, BLM would amend the CDCA Plan to determine that the site is suitable for wind energy development, but would deny the ROW application for the Proposed Project, and the County would not approve the CUP for the Proposed Project. The site would remain in its present condition consisting of vacant desert lands, and potential economic gains from a wind energy development project would not occur until such time that a future application for a similar project on the site is submitted and approved.

Alternative 3: Action on Amendment to CDCA Plan Determines Site Unsuitable for Wind Energy Development

Under Alternative 3, wind energy development would not be allowed and no changes would occur to the current Project site. BLM public lands and San Bernardino private lands would continue to be vacant and undisturbed until such time as a permitted use or subsequent amendment to the CDCA Plan is approved.

Potential economic gains from any development of wind farms would not occur under this alternative. New jobs and revenue would not be created; therefore, this would be considered to have a negative effect on the local economy.

Alternative 4: No Action on Site Suitability and Proposed Project

Under the No Action Alternative, no changes to the current Project site and area would occur. BLM public lands and San Bernardino private lands would continue to be vacant and undisturbed.

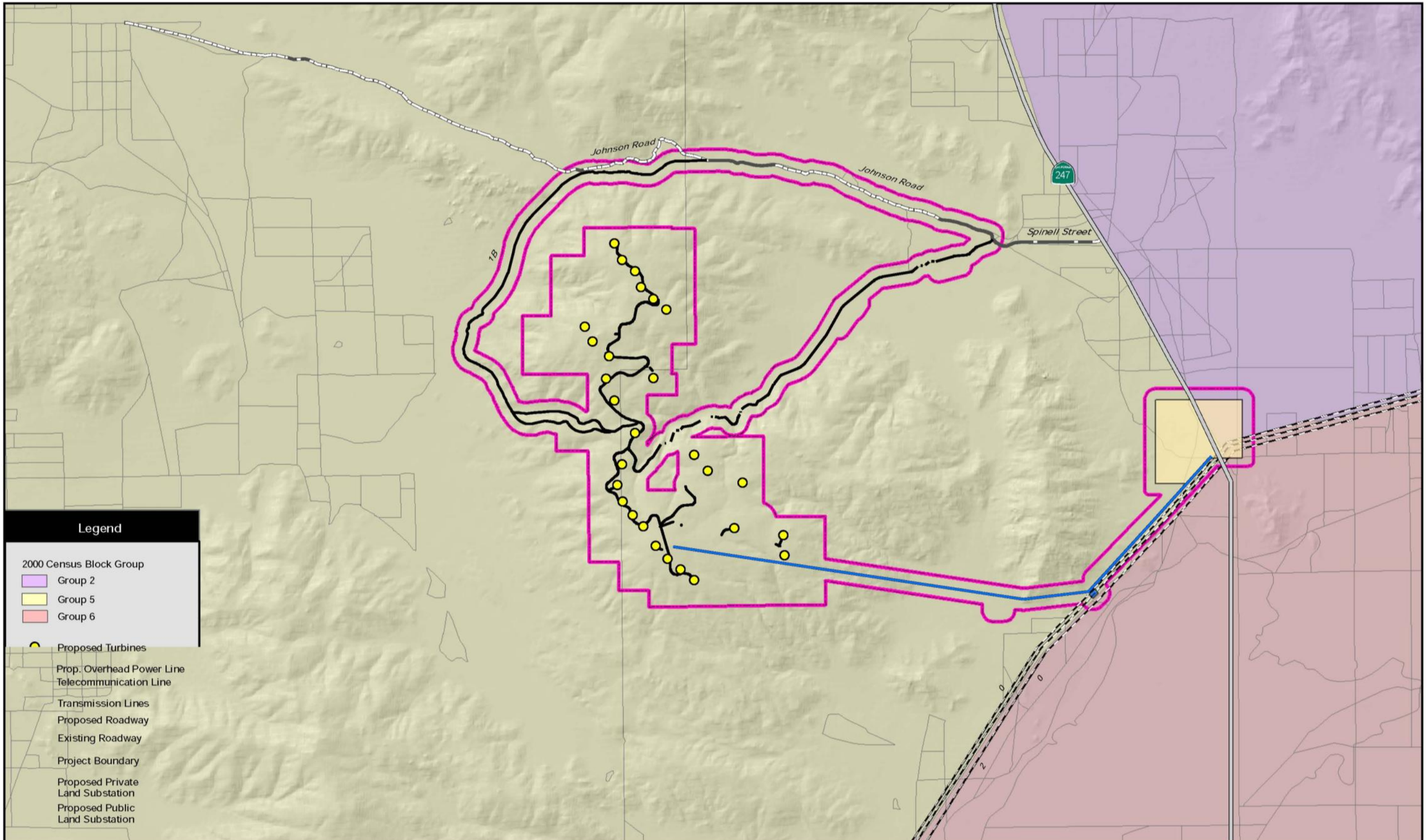
The social impact would be mixed. It would be favorable to those that value protection of natural open space lands from impacts that would be associated with the WTG facilities, but unfavorable to those that value the potential development of wind energy resources to support alternative energy solutions. Potential economic gains from the development of the WTG facilities would not occur under this alternative. New jobs and revenue would not be created; therefore, this would be considered to have a negative effect on the local economy.

3.11.5 Avoidance, Minimization, and/or Mitigation Measures

The Proposed Project would implement recommended BLM PEIS BMPs, which were adopted as part of the proposed Wind Energy Development Program to ensure minimal impact to natural and cultural resources. However, no BMPs or Project-specific mitigation measures were identified for this section.

3.11.6 Summary of Project Environmental Impacts after Mitigation Measures are Implemented

Implementation of the Proposed Project would not be considered substantial, socially or economically to the surrounding communities. The Proposed Project would contribute beneficial effects to the local communities, region, and the state.



Sources: US Census Bureaus, Southern California Edison, Granite Mountain Wind Energy Project Plan of Development 2009

0 0.5 1 Miles

GRANITE MOUNTAIN WIND ENERGY PROJECT
CENSUS BLOCK GROUP MAP

Figure 3.11-1

This page intentionally left blank.

3.12 ENVIRONMENTAL JUSTICE

Minorities are defined as individuals who are members of one or the following population groups: Hispanic origin, African-American, American Indian or Alaskan Native, and Asian or Pacific Islander. Minority populations are those either where the identified population in the affected area exceeds 50 percent or the minority population in the affected area is meaningfully greater than the minority population in the general population. Low-income populations are those exceeding the poverty threshold (CEQ, 1997).

Data used to assess environmental justice considerations were obtained from several sources. The U.S. Census Bureau, Census 2000, is the most complete and accurate source of demographic data and economic/income data available for the Project area. The County's General Plan (2007) was also used to obtain specific information related to housing and demographics. The Proposed Action and associated construction locations are compared with locations of minority or low-income populations to evaluate whether construction or operational impacts resulting from the Proposed Project would be disproportionate on these populations. Data related to the Census Tract block groups that encompass the Project area, as identified in Section 3.11, are used to compile information that could be used to distinguish those populations who are disadvantaged according to federal guidelines.

3.12.1 Impact Criteria

The potential risk of direct and indirect impacts affecting environmental justice is assessed with respect to one criterion. Potential impacts to environmental justice could occur if reasonably foreseeable future actions were to directly or indirectly:

- Cause a disproportionately high and adverse impact on minority or low-income populations.

3.12.2 Regulatory Setting

Federal Regulation

Bureau of Land Management Executive Order 12898

According to E.O. 12898, *Federal Actions to Address Environmental Justice in Minority Low-Income Populations* (*Federal Register*, 1994), federal agencies are to achieve environmental justice by identifying and addressing disproportionately high and adverse human health and environmental effects, including the interrelated socioeconomic effects of their programs, policies, and activities on minority population and low-income population. Such impacts are to be avoided or minimized to the extent feasible. In addition, California Government Code 65040.12(e) stipulates the fair treatment of people regardless of race or income with respect to environmental laws, regulations, and policies.

National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321 et seq.) provides a process for maintaining, protecting, and enhancing the environment. The NEPA process requires federal agencies to disclose the environmental consequences of their decision-making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions. As required by 40 C.F.R. 1508.8 (b) economic and social factors should be analyzed when preparing an EIS (CEQ, 1997).

3.12.3 Affected Environment

Census block groups (BG) are geographic subdivisions of census tracts; their primary purpose is to provide a geographic summary unit for census block data. A BG must comprise a reasonably compact and contiguous cluster of census blocks. Each census tract contains a minimum of 1 BG and may have a maximum of 9 BGs. The Project area BG is populated by residents who are more affluent and less racially diverse than the County and census county division (CCD) area. CCDs are geographic statistical subdivisions of counties established cooperatively by the Census Bureau and officials of state and local governments in states where minor civil divisions (MCDs) either do not exist or are unsatisfactory for census purposes. The information in Table 3.12-A shows the minority and low-income composition for the total population for the BG within the Project area. Individuals identifying themselves as Hispanic or Latino are included in the table as a separate entry. However, because Hispanics can be of any race, this number also includes individuals identifying themselves as being part of one or more population groups. The table indicates percentages of low-income and minority residents are far less than the County. The percentage of minority persons and low-income persons do not exceed the County average of 56 percent and 16 percent, respectively, and does not exceed 50 percent of the total population in the BG, meaning that there are no disproportionately high minority or low-income populations in the area, when assessed on a BG level.

Table 3.12-A: Minority & Low-Income Comparison

CATEGORY	SAN BERNARDINO COUNTY	BARSTOW-VICTORVILLE CCD	CT 121 BG 5*	CT 121 BG 2	CT 121 BG 6
Total Population	1,709,434	285,337	2,579	152	1,381
White, Non-Hispanic	44%	60%	82%	86%	74%
Hispanic or Latino	39%	28%	16%	9%	17%
Black or African American	9%	7%	2%	1%	3%
American Indian or Alaskan Native	1%	1%	0	<1%	1%
Asian	4%	2%	0	1%	2%
Native Hawaiian or Other Pacific Islander	<1%	<1%	0	0	<1%
Some Other Race	<1%	<1%	<1%	5%	8%
Two or More Races	3%	3%	1%	3%	4%
Total Minority	960,210	117,437	424	29	548
Percent Minority	56%	41%	16%	19%	36%
Low-Income	280,154	38,050	78	10	1,153
Percent Low-Income	16%	13%	3%	6%	16%

Source: U.S Census Bureau, Census 2000 Summary File 1 (P3. Race)
* CT= Census Tract; BG= Block Group

ENVIRONMENTAL CONSEQUENCES

Alternative 1: Proposed Project

Environmental justice effects as a result of the Proposed Project include issues associated with the construction and operation of the Project.

The construction of wind towers, transmission, and other facilities associated with the Proposed Project are subject to the provisions of Executive Order 12898. However, based on Table 3.12-A, the percentage of low-income and minority persons within the Project area does not exceed the County average. Therefore, the environmental impacts identified for

the Proposed Project would not disproportionately affect minority and/or low-income populations.

Alternative Access Route 1A

No effects to environmental justice would result from the alternative access routes. The access routes are intended to reduce specific environmental effects by rerouting or reducing access roads, none of which would disproportionately affect minority and/or low-income populations.

Alternative Access Route 1B

Effects would be the same as those of Alternate Access Route 1A. See the discussion above.

Alternative Jasper Substation 1A – Public Land

Construction and operation of Substation 1A would not disproportionately affect minority and/or low-income populations. Based on Table 3.12-A, the percentage of low-income and minority persons within the Project area do not exceed the County average.

Alternative Jasper Substation 1B – Private Land

Effects would be the same as those of Substation 1A. See the discussion above.

Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development, ROW Application Denied, and CUP Not Approved

Under this alternative, BLM would amend the CDCA Plan to determine that the site is suitable for wind energy development, but would deny the ROW application for the Proposed Project, and the County would not approve the CUP for the Proposed Project. The site would remain in its present condition consisting of vacant desert lands, and disproportionate impacts on minority and/or low income populations are not anticipated.

Alternative 3: Action on Amendment to CDCA Plan Determination Site Unsuitable for Wind Energy Development

Under Alternative 3, wind energy development would not be allowed and no changes would occur to the current Project site. BLM public lands and San Bernardino private lands would continue to be vacant and undisturbed until such time as a permitted use or subsequent amendment to the CDCA Plan is approved. As with the proposed action, disproportionate impacts on minority and/or low-income populations are not anticipated.

Alternative 4: No Action on Site Suitability and Proposed Project

There would be no change in existing conditions under the No Action Alternative; therefore, this alternative would have no impact on minority and/or low-income populations.

3.12.4 Avoidance, Minimization, and/or Mitigation Measures

The Proposed Project would implement recommended BLM PEIS BMPs, which were adopted as part of the proposed Wind Energy Development Program to ensure minimal impact to natural and cultural resources. However, no BMPs or Project-specific mitigation measures were identified for this section.

3.12.5 Summary of Project Environmental Impacts after Mitigation Measures are Implemented

Implementation of the Proposed Project would not have disproportionately high and adverse human health and environmental effects on minority and/or low-income populations.

3.13 TRANSPORTATION SYSTEMS AND FACILITIES

The focus of the following section is the potential transportation and access impacts associated with the alternatives.

3.13.1 Impact Criteria

Potential impacts to transportation systems and facilities could occur if reasonably foreseeable future actions were to result in any of the following:

- Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system;
- Exceed, either individually or cumulatively, a level of service standard established by the County congestion management agency for designated roads or highways;
- Result in inadequate emergency access.

3.13.2 Regulatory Settings

Federal Regulation

The Proposed Project is subject to 43 CFR 8342.1, which requires all public lands to have off-road vehicle designations that are listed as open, limited, or closed to off-road vehicles. This regulation applies to land use plan decisions that permit, establish conditions, or prohibit off-road vehicle activities on specific areas of public lands. The regulation establishes the following criteria for designation:

(a) Areas and trails shall be located to minimize damage to soil, watershed, vegetation, air, or other resources of the public lands, and to prevent impairment of wilderness suitability.

(b) Areas and trails shall be located to minimize harassment of wildlife or significant disruption of wildlife habitats. Special attention will be given to protect endangered or threatened species and their habitats.

(c) Areas and trails shall be located to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors.

(d) Areas and trails shall not be located in officially designated wilderness areas or primitive areas. Areas and trails shall be located in natural areas only if the authorized officer determines that off-road vehicle use in such locations will not adversely affect their natural, esthetic, scenic, or other values for which such areas are established.

The Proposed Project is located in San Bernardino County, California, on private lands and lands administered by the BLM. Land use decisions within the project area are governed by policies contained in the San Bernardino County General Plan and the West Mojave Plan amendment to the CDCA Plan.

Federal Aviation Administration

The FAA has established standards for marking and lighting structures to promote aviation safety in the Advisory Circular (AC 70/7460-1K). Generally, any temporary or permanent structure, including all appurtenances, that exceeds an overall height of 200 feet (61m) above ground level or exceeds any obstruction standard contained in 14 CFR part 77, should normally be marked and/or lighted. For construction or alteration of a structure that cause an effect, the National Airspace System is required under the provisions of 14 CFR Part 77 to notify the FAA by completing a Notice of Proposed Construction or Alteration Form 7460-1.

Chapter 13 of the Advisory Circular AC 70/7460-1K defines specific requirements for WTG facilities. Requirements provided consider proximity to airports and VFR routes, extreme terrain where heights may vary, and local flight activity. The chapter provides guidelines for configuration of wind turbines, marking standards, and lighting standards.

Local Regulation

San Bernardino County General Plan

The San Bernardino County General Plan established, as a countywide target, a minimum Level of Service (LOS) C on all County roadways in the Desert Region. At LOS C, the level of traffic flow remains safely below the posted speed limit but efficiently close to capacity. Additionally, the General Plan establishes policies to be implemented by the County in conjunction with future development projects. The following relevant General Plan policies are included in the Lucerne Valley Area Plan, of which the Proposed Project is located:

Goal LV/CI 1: Ensure a safe and effective transportation system that provides adequate traffic movement while preserving the rural desert character.

- **POLICY LV/CI 1.10:** Require a traffic impact analysis report to identify impacts and mitigation measures for projects that may result in potentially significant impacts.

3.13.3 Affected Environment

Existing Roadways and Highways

Two state highways, SR-18 and SR-247, intersect in the community of Lucerne Valley. SR-18 is a two-lane major highway that begins in Los Angeles County and extends east through the City of Victorville and the Town of Apple Valley to its junction with SR-247. It then turns southeast, entering the San Bernardino National Forest, where it is classified as a mountain highway, and continues to the City of Big Bear Lake. SR-247 (Old Woman Springs Road) is a two-lane major highway that starts as an interchange off of I-15 in the City of Barstow and extends south to its junction with SR-18. SR-247 continues southeast through the communities of Landers and Homestead Valley before terminating at its junction with SR-62 in the Town of Yucca Valley. SR-18 and SR-247 bear the burden of nearly all local trips as well as the visitor traffic that comes from outside the region.

Level of Service (LOS) Concept

As defined by the 2000 Highway Capacity Manual analysis methodologies, roadway operations and the relationship between capacity and traffic volumes are generally expressed in terms of LOSs, which are defined using letter grades A through F. These levels recognize that, while an absolute limit exists as to the amount of traffic traveling

through a given intersection, the conditions that motorists experience rapidly deteriorate as traffic approaches absolute capacity. Under such conditions, congestion is experienced. There is generally instability in the traffic flow, which means that relatively small incidents can cause considerable fluctuations in speeds and delays. This near-capacity situation is labeled LOS E. Beyond LOS E, capacity has been exceeded, and arriving traffic will exceed the ability of the intersection to accommodate it. LOS definitions are provided in Table 3.13-1, *Traffic Level of Service (LOS) Definitions*.

Table 3.13-A: Traffic Level of Service (LOS) Definitions

LOS	DESCRIPTION
A	LOS A represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.
B	LOS B is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.
C	LOS C is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.
D	LOS D represents high-density but stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.
E	LOS E represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.
F	LOS F is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount that can traverse the point. Queues form behind such locations.

Source: Congestion Management Program for San Bernardino County.

Level of Service (LOS) Standards

Segment LOS standards and thresholds provide the basis for analysis of arterial roadway segment performance. The analysis of roadway segment LOS is based on the functional classification of the roadway, the maximum capacity, roadway geometrics, and existing or forecast ADT volumes. The roadway capacity standards were based on the San Bernardino County Congestion Management Program. The capacities shown in Table 3.13-B reflect the generalized peak hour/peak direction level of service maximum volumes that can be reasonably carried on the roadway under prevailing traffic conditions.

Table 3.13-B: Generalized Peak Hourly/Directional Capacities

ROADWAY SECTION		LEVEL OF SERVICE				
Lanes	***Cross-section***	***A***	***B***	***C***	***D***	***E***
2	Undivided	490	740	790	830	870
4	Divided	1,080	1,610	1,680	1,760	1,850
6	Divided	1,680	2,450	2,530	2,650	2,770
2	Divided + (Left Turn)	515	777	830	872	914
2	Divided (No Left)	417	629	672	706	740
4	Undivided + (Left)	1,026	1,530	1,596	1,672	1,758
6	Undivided + (Left)	1,596	2,328	2,404	2,518	2,632

Source: Congestion Management Program for San Bernardino County.

Existing Roadway Operating Conditions

Table 3.13-C summarizes the existing operation performance of the roadway circulation system serving the Project area. As shown in the table, both roadway segments are forecast to operate at LOS conditions during both AM and PM peak hours. The generally low traffic volume of the roadway circulation system within the Project area shows sufficient roadway capacity to handle existing and future traffic.

Table 3.13-C: Roadway Level of Service – Existing Conditions

ROADWAY	LOCATION	CLASSIFICATION	AM PEAK HOUR DIRECTIONAL VOLUME (NB/SB)	AM PEAK HOUR PEAK DIRECTIONAL LOS (NB/SB)	PM PEAK HOUR DIRECTIONAL VOLUME (NB/SB)	PM PEAK HOUR PEAK DIRECTIONAL LOS (NB/SB)
SR-247	North of Rabbit Spring Road	State Highway (2-Lane)	82/108	A/A	100/90	A/A
SR-247	South Stoddard Wells Road	State Highway (2-Lane)	101/134	A/A	125/110	A/A

Air Traffic

According to the General Plan Circulation Element, local airports include Apple Valley Airport, Southern California Logistics Airport, and Barstow-Daggett Airport. Military airports include Edwards AFB and Twentynine Palms Marine Corps Base. However, due to the location and distance to the Proposed Project, Edwards AFB, Twentynine Palms Marine Corps Base, and Barstow-Daggett Airport will not be discussed further in this analysis. Land use compatibility with airports is discussed in Section 3.9, *Land Use and Planning*.

The Apple Valley Airport is located approximately 10 miles west of the Proposed Project. It is considered a major factor in the overall service to Apple Valley by various transportation alternatives. It is a general aviation airport owned by the County of San Bernardino. It is bordered by Central Road to the east, Papago Road to the south, Ramona Road to the west, and Burbank Street to the north. The airport houses 119 aircrafts, with approximately 103 aircraft operations per day.

The former George Air Force Base, now called the Southern California Logistics Airport (SCLA) is located in Victorville. SCLA is one of the five federally owned airports in the County and is being converted to civilian use. It is located approximately 19 miles west of the Proposed Project. At completion, SCLA is expected to have the capacity to handle nearly 4 million tons of air cargo annually and grow from 3 to 9 million tons per year in the next 20 years.

3.13.4 Environmental Consequences

Future Baseline Traffic Projections

Project construction trips are anticipated to reach their peak by 2011. For analysis purposes, 2012 was used for Project operations evaluation. Consistent with traffic analysis assumptions used in the Project area and as previously recommended and approved by the Traffic Division of the San Bernardino County Department of Public Works staff, a 2 percent annual growth rate per year was used to develop 2011 baseline conditions.

Alternative 1: Proposed Project

Project Construction Impacts

Construction of the Proposed Project is anticipated to be completed in approximately 10 months. During Project construction, the following construction activities are anticipated on the Project site:

- Grading of the field construction office and substation areas;
- General clearing and construction of access roads, crane pads, and turn-around areas;
- Construction of turbine tower foundations;
- Installation of the electrical collection system;
- Assembling and erection of the wind turbines;
- Construction and installation of the substations;
- Plant commissioning and energization;
- Final grading and drainage; and
- Restoration activities.

According to the Project description, the construction manpower needs would range from 5 to 75 construction workers on-site during peak construction activities. Additionally, up to 100 delivery trucks are anticipated during peak construction activities. The combined peak construction trips for construction workers are summarized in Table 3.13-D, Anticipated Project Construction Trip Generation.

Table 3.13-D: Anticipated Project Construction Trip Generation

Vehicle Type	Actual Vehicle Round Trips Vehicles	Peak Daily Trips	Peak Hourly Trips (a.m.)			Peak Hourly Trips (p.m.)		
			Inbound	Outbound	Total	Inbound	Outbound	Total
Construction Worker Vehicles [1]	75	150	25	0	25	0	25	25
Truck Deliveries [2]	100	600	75	75	150	0	75	75
Total	175	750	100	75	175	0	100	100

Source: Project Plan of Development
Notes:
[1] Conservatively assumed to drive alone with no carpooling. It was also conservatively assumed that one-third (25) of the 75 construction worker vehicles will arrive during the a.m. (peak one hour between 7:00 and 9:00) and all will leave during p.m. (peak one hour between 4:00 and 6:00) peak hours.
[2] Truck deliveries shown in the table were adjusted by a factor of 3 into Passenger Car Equivalent (3 PCE) vehicles. The trip generation estimate was based on the anticipated peak delivery trips during Project construction. The 100 peak truck deliveries @ 3 PCE/truck equate to 300 PCE vehicles. Peak daily trips (including both the inbound and outbound trips) = 2 x 300 PCE vehicles = 600 PCE Trips. It was also assumed that some delivery trips may occur during the morning (7-9 a.m.) peak hour and afternoon (4-6 p.m.) peak hour. For analysis purposes, approximate 25 percent of the 100 truck peak deliveries were assigned in the morning and afternoon peak hours while the remaining deliveries were assumed to occur in between the peak hours.
a.m. = morning
p.m. = evening

Based on the peak Project trip generation assumption described above, it is anticipated that peak Project construction activities would add 25 worker trips and 150 PCE equivalent truck trips (50 actual truck trips) during the A.M. hours and 25 worker trips and 75 PCE equivalent truck trips (25 actual truck trips) at the regional and local roadway circulation system during the P.M. hours, respectively. The remaining construction worker trips are assumed to arrive prior to the 7-9 A.M. and depart prior to the 4-6 P.M. peak hours. The majority of delivery trips are also anticipated to arrive and leave outside of the A.M. and P.M. peak hours. The Proposed Project would not generate and contribute substantial amounts of traffic to the roadway system during the construction phase of the Proposed Project.

Table 3.13-E, Roadway Level of Service - Year 2011 No Project Conditions, summarizes the anticipated LOSs within the Project area and will be used as the baseline conditions to evaluate 2011 Project construction conditions.

Table 3.13-E: Roadway Level of Service – Year 2011 No Project Conditions

ROADWAY	LOCATION	CLASSIFICATION	AM PEAK HOUR DIRECTIONAL VOLUME (NB/SB)	AM PEAK HOUR PEAK DIRECTIONAL LOS (NB/SB)	PM PEAK HOUR DIRECTIONAL VOLUME (NB/SB)	PM PEAK HOUR PEAK DIRECTIONAL LOS (NB/SB)
SR-247	North of Rabbit Spring Road	State Highway (2-Lane)	87/114	A/A	106/95	A/A
SR-247	South Stoddard Wells Road	State Highway (2-Lane)	107/142	A/A	133/117	A/A

Consistent with the findings in the existing conditions, both roadway segments are forecast to operate at LOS A during A.M. and P.M. peak hours under year 2011 no Project conditions.

Table 3.13-F summarizes the results of year 2011 project construction conditions. Peak Project construction traffic was assigned to the roadway segments to evaluate A.M. and P.M. peak LOS.

Table 3.13-F: Roadway Level of Service – Year 2011 Project Construction Conditions

ROADWAY	LOCATION	CLASSIFICATION	AM PEAK HOUR DIRECTIONAL VOLUME (NB/SB)	AM PEAK HOUR PEAK DIRECTIONAL LOS (NB/SB)	PM PEAK HOUR DIRECTIONAL VOLUME (NB/SB)	PM PEAK HOUR PEAK DIRECTIONAL LOS (NB/SB)
SR-247	North of Rabbit Spring Road	State Highway (2-Lane)	162/171	A/A	106/170	A/A
SR-247	South Stoddard Wells Road	State Highway (2-Lane)	126/167	A/A	158/117	A/A

As shown in Table 3.13-F, even with the Project-added traffic during peak construction, the generally low traffic volume of the roadway circulation system within the Project area has sufficient capacity and can reasonably accommodate short-term peak Project construction traffic. Project construction activities would not substantially impact the roadway circulation system serving the Proposed Project. The Proposed Project would not exceed the County LOS standards for the roadway system during the construction phase of the Proposed Project. All segments are forecast to operate at acceptable LOS A during Project construction.

Project Operations Impacts

As described in the Project description in Chapter 2, the Proposed Project would be operated and maintained by a team of up to eight personnel. Routine operations would include the monitoring and control of the wind turbines from the centralized computer in the O&M building or remotely and resetting the turbine controls and re-starting turbines after any outages. Routine maintenance would include regular wind turbine inspections, lubrication of mechanical parts, changing of fluids and, if necessary, blade cleaning. During the Project operation period, roads would be inspected at least twice annually. Periodic grading and placement of gravel may be required to maintain road quality. Road maintenance would be scheduled during times of low or no wind to minimize airborne dust. Speed limits of 20 mph would be posted and enforced for all O&M vehicles to minimize airborne dust and erosion.

Based on the very low project trip generation (eight personnel) during project operation, it is anticipated that acceptable LOS A at the roadway segments used for the Project would remain during operations. Since all roadways are forecast at acceptable LOS A during construction, the substantially lower trips (eight personnel) during operation would also result in LOS A conditions. The Proposed Project would not generate and contribute substantial amount of traffic to the roadway system during the operation phase of the Proposed Project.

It is anticipated that Project operation would not cause inadequate emergency access to either the Project site or surrounding communities. Furthermore, Project operation would not block or interfere with existing emergency access routes or cause inadequate parking capacity. There is no existing parking problem at the Proposed Project site and surrounding area. Project operation parking could be accommodated on-site.

Alternative Access Route 1A

The Proposed Project would require the construction of a new access route. It has been determined that the Proposed Project would not generate or contribute a substantial amount of traffic to the roadway system during the construction of Access Route 1A. All roadway segments are forecast to operate at acceptable LOS A during Project construction and operation.

Alternative Access Route 1B

Environmental impacts are the same as those of Alternative Access Route 1A, see the analysis, above.

Alternative Jasper Substation 1A – Public Land

Operation of Substation 1A would not impact transportation. The substation is an ancillary facility as part of the Proposed Project. No new traffic or roads would be required. No impacts are anticipated during the operation of the substation; however, construction of the substation may temporarily increase traffic. As stated above, the Proposed Project would not exceed the County LOS standards for the roadway system during the construction and operation phase of the Proposed Project. Mitigation measures MMTRANS1 to 4 would reduce potential temporary construction delays.

Alternative Jasper Substation 1B – Private Land

Environmental impacts are the same as those of Substation 1A, see the analysis above. Implementation of Project-specific mitigation measures and BMPs would reduce potential impacts to construction traffic.

Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development, ROW Application Denied, and CUP Not Approved

Under this alternative, BLM would amend the CDCA Plan to determine that the site is suitable for wind energy development, but would deny the ROW application for the Proposed Project, and the County would not approve the CUP for the Proposed Project. The site would remain in its present condition consisting of vacant desert lands, and impacts to transportation systems and facilities would not occur.

Alternative 3: Action on Amendment to CDCA Plan Determines Site Unsuitable for Wind Energy Development

Under Alternative 3, the Project site would be determined unsuitable for wind energy development and the Proposed Project would not be permitted. Therefore, Alternative 3 would not have a substantial effect on transportation.

Alternative 4: No Action on Site Suitability and Proposed Project

Under the No Action Alternative, the CDCA Plan would not be amended nor would the Proposed Project be implemented.

3.13.5 Avoidance, Minimization, and/or Mitigation Measures

The Proposed Project would implement recommended BLM PEIS BMPs, which were adopted as part of the proposed Wind Energy Development Program to ensure minimal impact to natural and cultural resources. In addition to the BLM BMPs, Project-specific mitigation measures evaluated for their ability to eliminate or reduce the potential substantial adverse impacts related to construction transportation were developed for the Proposed Project.

BLM BEST MANAGEMENT PRACTICES

Construction BMPs

- An access road siting and management plan shall be prepared incorporating existing BLM standards regarding road design, construction, and maintenance, such as those described in the BLM 9113 Manual and the *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development*.
- Existing roads shall be used, but only if in safe and environmentally sound locations. If new roads are necessary, they shall be designed and constructed to the appropriate BLM road design standards and be no higher than necessary to accommodate their intended functions (e.g., traffic volume and weight of vehicles). Excessive grades on roads, road embankments, ditches, and drainages shall be avoided, especially in areas with erodible soils. Special construction techniques shall be used, where applicable. Abandoned roads and roads that are no longer needed shall be recontoured and revegetated.

- Access roads and on-site roads shall be surfaced with aggregate materials, wherever appropriate.
- A transportation plan shall be developed, particularly for the transport of turbine components, main assembly cranes, and other large pieces of equipment. The plan shall consider specific object sizes, weights, origin, destination, and unique handling requirements and shall evaluate alternative transportation approaches. In addition, the process to be used to comply with unique state requirements and to obtain all necessary permits shall be clearly identified.
- A traffic management plan shall be prepared for the site access roads to ensure that no hazards would result from increased truck traffic and that traffic flow would not be adversely impacted. This plan shall incorporate measures such as informational signs, flaggers when equipment may result in blocked throughways, and traffic cones to identify any necessary changes in temporary lane configuration.
- Project personnel and contractors shall be instructed and required to adhere to speed limits commensurate with road types, traffic volumes, vehicle types, and site-specific conditions, to ensure safe and efficient traffic flow and to reduce wildlife collisions and disturbance and airborne dust.
- Traffic shall be restricted to the roads developed for the Proposed Project. Use of other unimproved roads shall be restricted to emergency situations.
- Signs shall be placed along construction roads to identify speed limits, travel restrictions, and other standard traffic control information. To minimize impacts on local commuters, consideration shall be given to limiting construction vehicles traveling on public roadways during the morning and late afternoon commute time. Consideration shall also be given to opportunities for busing of construction workers to the job site to reduce traffic volumes.
- Ongoing ground transportation planning shall be conducted to evaluate road use, minimize traffic volume, and ensure that roads are maintained adequately to minimize associated impacts.

PROJECT-SPECIFIC MITIGATION MEASURES

Construction Mitigation

MMTRANS1: Construction activities would be designed to minimize work on, or use, of local streets.

MMTRANS2: Any construction or installation work requiring the crossing of a local street, highway, or rail line would incorporate the use of guard poles, netting, or similar means to protect moving traffic and structures from the activity. If necessary on state highways, continuous traffic breaks operated by the CHP would be planned and provided.

MMTRANS3: Traffic control and other management plans would be prepared where necessary to minimize project impacts on local streets. The traffic management plan may include provisions for signage and noticing to inform the public about work before any disruptions occur, the use of flagmen and/or escort vehicles to control and direct traffic flow, and scheduling roadway work during periods of minimum traffic flow.

MMTRANS4: Any damage to local streets caused by SCE in relation to project construction would be repaired and restored to their previous condition.

3.13.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented

With implementation of the BMPs, Project-specific mitigation measures, and compliance with FAA regulations set forth in the regulatory settings of this section, all potential impacts of the Proposed Project related to transportation would be reduced.

3.14 UTILITIES AND SERVICE SYSTEMS

This section evaluates the impacts of the Proposed Project associated with utilities and service systems.

3.14.1 Impact Criteria

The potential risk of direct and indirect impacts affecting utilities and service systems is assessed with respect to seven criterions. Potential impacts to utilities and service systems could occur if reasonably foreseeable future actions were to result in any of the following:

- Impact electricity requiring or resulting in the construction of new facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects.
- Have insufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed;
- Require or result in the construction of new wastewater treatment facilities, including septic systems, or expansion of existing facilities, the construction of which would cause significant environmental effects;
- Be served by a landfill with insufficient permitted capacity to accommodate the Project's solid waste disposal needs; or
- Does not comply with federal, state, and local statutes and regulations related to solid waste.

3.14.2 Regulatory Settings

Federal Regulations

Executive Order 13211

On May 18, 2001, President Bush signed an Executive Order to consider federal regulations on supply, distribution, and energy use. Executive Order 13211 requires agencies to provide a Statement of Energy Effects when undertaking certain agency actions. The Statement shall describe the effects of certain regulatory actions on energy supply, distribution, or use.

Wind Energy Development Policy (IM No. 2009-043)

The U.S. Department of Interior Bureau of Land Management issued on August 24, 2006 (later updated in December 22, 2008), a Wind Energy Development Policy. In response to the Wind Energy Development Programmatic Environmental Impact Statement (PEIS) of June 2005, the policy clarifies the BLM Wind Energy Development polices and BMPs. Issuance of this policy ensures BLM-wide consistency in the processing of right-of-way application and the management authorizations for wind energy development on public lands.

Federal Water Pollution Control Act

In 1972, the Clean Water Act was amended to prohibit the discharge of pollutants to waters of the United States unless the discharge is in compliance with an NPDES permit. The Clean Water Act focused on tracking point sources, primarily from wastewater treatment facilities and industrial waste dischargers, and required implementation of control measures

to minimize pollutant discharges. The Clean Water Act was amended again in 1987, adding Section 402(p), to provide a framework for regulating municipal and industrial stormwater discharges. In November 1990, the EPA published final regulations that establish application requirements for specific categories of industries, including construction projects that encompass greater than or equal to 5 acres of land. The Phase II Rule became final in December 1999, expanding regulated construction sites to those greater than or equal to 1 acre. The regulations require that stormwater and non-stormwater runoff associated with construction activity that discharges either directly to surface waters or indirectly through municipal separate storm sewer systems (MS4s), must be regulated by an NPDES permit.

State Regulations

The California Integrated Waste Management Act of 1989 (AB 939) redefined solid waste management in terms of both objectives and planning responsibilities for local jurisdictions and the state. The act was adopted in an effort to reduce the volume and toxicity of solid waste that is landfilled and incinerated by requiring local governments to prepare and implement plans to improve the management of waste resources. AB 939 required each city and unincorporated county portions to divert a minimum of 25 percent of the solid waste landfilled by 1995 and 50% by the year 2000. To attain goals for reductions in disposal, AB 939 established a planning hierarchy utilizing new integrated solid waste management practices. These practices include source reduction, recycling, and composting, as well as environmentally safe landfill disposal and transformation.

Other state statutes pertaining to solid waste include compliance with the California Solid Waste Reuse and Recycling Act of 1991 (AB 1327), which requires the local jurisdiction to require adequate areas for collecting and loading recyclable materials within a development project for commercial, institutional, marina, and residential buildings with 5 units or more. To meet this state requirement, San Bernardino County Waste Management Department requires that, prior to construction of any commercial or industrial facilities, clearance from the Waste management Department is needed to verify compliance with AB 1327 in terms of installation of recycling access areas at these facilities.

Local Regulations

San Bernardino County General Plan

GOAL CO 9: The County will promote energy conservation and encourage safe mining practices.

- **POLICY CO 9.1:** The County will promote energy conservation in its government-owned facilities, with its contractors, and the community at large.

GOAL D/CO 2: Encourage utilization of renewable energy resources.

GOAL CI 11: The County will coordinate and cooperate with governmental agencies at all levels to ensure safe, reliable, and high quality water supply for all residents and ensure prevention of surface and ground water pollution.

- **POLICY CI 11.13:** Prevent surface and groundwater pollution and continue the cleanup of contaminated waters and watersheds.

GOAL D/CI 3: Encourage property maintenance to enhance regional aesthetics with the promotion of water and soil conservation, recycling and proper solid waste disposal.

County of San Bernardino Municipal Code- Ordinance 3966

Adopted on December 20, 2005, the ordinance provides a set of standards, conditions, and procedures for the placement of accessory wind energy systems on lots in unincorporated areas of San Bernardino County. The purpose of the ordinance is to reduce consumption of electrical power supplied by utility companies.

3.14.3 Affected Environment

Electrical Transmission Lines

The Proposed Project is located adjacent to the Southern California Edison (SCE) Lugo-Victor-Kramer-Control Corridor. This corridor comprises the El Dorado-Lugo 500-kV line, Lugo-Mohave 500-kV line, and the Lugo-Pisgah No.1 220-kV line.

The Development Plan for the Granite Mountain Wind Energy Project describes an interconnection to SCE transmission facilities with an aboveground 220-kV overhead generation tie-line routed from the Proposed Project substation to a SCE 220-kV Lugo-Pisgah transmission line located southeast of the Project area.

Public Land Substation Alternative

Under the Public Land Substation alternative, the transmission line would connect to a proposed substation facility to be constructed adjacent to the interconnection location. The proposed transmission line would be approximately 3.2 miles in length and located entirely on BLM land, including the substation facility. The line is anticipated to be routed through Sections 7, 8, 9, or Sections 17, 15, and 16 of Township 5 North, Range 1 West (see **Figure 3.14-1**, *Existing & Proposed SCE Transmission Line*).

Private Land Substation Alternative

An alternative substation location has been identified further east of the Project site, near the intersection of SR-247 and Hayes Road. Specific location information has not yet been determined for the facility; however, a general location has been identified for purposes of this environmental analysis. A 3.2-mile long overhead transmission line would connect to the existing Lugo-Pisgah transmission line from the Granite Mountain Wind Energy Project. It would continue northeast for approximately 1.2 to 1.7 miles in length through privately owned land to a proposed new the substation facility. The line is anticipated to be routed through Sections 2 and 11 of Township 5 North, Range 1 West (see **Figure 3.14-1**, *Existing & Proposed SCE Transmission Line*).

Water Services

There are 11 primary local water suppliers for the Lucerne Valley Community. Bar H Mutual Water Company, Desert Dawn Mutual Water Company, Desert Springs Mutual Water Company, Center Water Company, Gordan Acres Water Company, Jubilee Mutual Company, Lucerne Valley Parks and Recreation CSA, Lucerne Valley Trailer Park, Lucerne Valley Mutual Water Company, and Lucerne Vista Mutual Water Company supply their specific areas. Approximately 2,722 customers are served by these water suppliers. All of the water purveyors in this area obtain water through groundwater wells. There were no other listed water sources in this plan area. Water demand is approximately 662 acre-feet per year. Those residents who live outside of a water purveyor boundary have their own on-site methods, such as wells that pull water from the Este sub-area, which is managed by the Mojave Basin Area Watermaster.

Currently, there are no planned water lines within the Project site. The Project site would remain in its natural condition.

Sewer Services

According to the County General Plan, the entire Lucerne Valley Community has been developed with septic tanks and leachfield systems. There are an unknown number of private systems, as some properties may have multiple systems. There are no planned sewer lines within the Project vicinity. The Victor Valley Wastewater Treatment Plant (VVWTP) accepts septage waste from septic tanks and chemical toilet waste. The VVWTP treats approximately 500,000 gallons of septic tank and chemical toilet waste a month.

Solid Waste

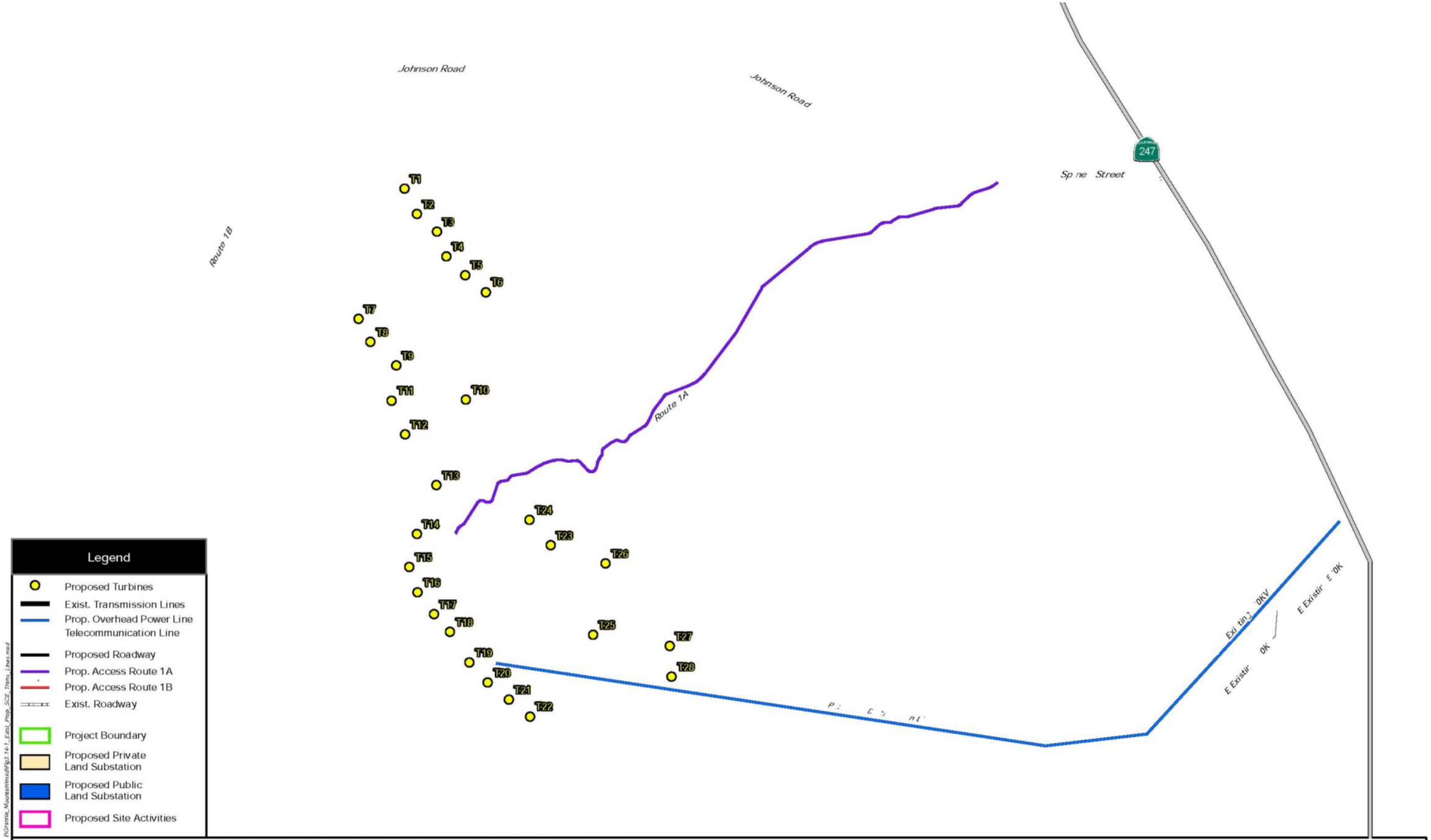
The County of San Bernardino Solid Waste Management Division (SWMD) is responsible for the operation and management of the County's solid waste disposal system. Burrtec Waste Industries is contracted by the County for disposal site operations and maintenance. The County is responsible for solid waste management in the unincorporated County areas. There are two landfills within the desert region: Victorville Sanitary Landfill and Barstow Sanitary Landfill. Both landfills are Class III municipal solid waste landfills. As Class III landfills, the landfills accept primarily non-hazardous residential and commercial/industrial municipal solid waste.

The Project site is located approximately 14 miles east of the Victorville Sanitary Landfill. The Victorville Sanitary Landfill is located in the city of Victorville at 18600 Stoddard Wells Road, west of Interstate 15. The landfill is owned and operated by San Bernardino County. The landfill encompasses 491 acres, of which 341 acres are permitted for waste disposal. The landfill is currently permitted to receive 3,000 tons of refuse per day (1,095,000 tons per year) and has a remaining disposal capacity of 82.2 million tons.

The Barstow Sanitary Landfill is located approximately 21 miles north of the Project site in the city of Barstow. The landfill is located south of I-40 and east of I-15 at 32553 Barstow Road. San Bernardino County owns and operates the landfill. The landfill is approximately 640 acres, and the actual permitted acreage is 47 acres. An EIR for the expansion of the landfill by 331 acres was certified in October 2009, and permits are pending.

Telecommunication

Telecommunication services would be required for Project operation. Both Verizon and AT&T provide telecommunication services to the Town of Apple Valley, community of Lucerne Valley, and other unincorporated areas. Currently, there are no telecommunication lines within the Project area.



Sources: Image Connect - Aerials, Southern California Edison, Granite Mountain Wind Energy Project Plan of Development 2009

0 2,500 5,000 Feet

Scale: 1" = (1:40,000)
SCALE CORRECT WHEN PRINTED AT 8.5 X 11

GRANITE MOUNTAIN WIND ENERGY PROJECT
EXISTING & PROPOSED SCE TRANSMISSION LINE

Figure: 3.14-1

This page intentionally left blank.

3.14.4 Environmental Consequences

Alternative 1: Proposed Project

Operation of the Proposed Project would not require the installation of new or alter existing water service, sewer service, natural gas service, storm sewer systems, cable television, or other services common to commercial or industrial development. The only utilities that would be needed to serve the Proposed Project are electrical service and telephone/data lines, which would be extended to the Project site from existing facilities in the area. Construction of the Proposed Project would require some additional solid waste disposal services to accommodate the needs of the substation and operations and maintenance building. Alternative access routes 1A and 1B proposes to reduce specific environmental effects by rerouting or reducing access roads. None of which requires utility services. Alternative substation locations would only require telecommunication services.

Electrical Transmission Lines

Interconnecting the Granite Mountain Wind Energy Project to SCE's Lugo-Pisgah transmission line would require the construction of a new 220-kV SCE substation and the looping of the existing Lugo-Pisgah transmission line into the new SCE substation. The existing Lugo-Pisgah 220-kV transmission line currently does not have the systems capacity for the Proposed Project and future generation projects. The existing SCE Lugo-Pisgah transmission line would need to be upgraded to 500-kV to safely and reliably transmit the energy generated by the Granite Mountain Wind Energy Project and other generation projects also desiring interconnection to the Lugo-Pisgah line.

Construction of the new 220-kV SCE substation and the looping of the existing Lugo-Pisgah transmission line into the new SCE substation needed on-site is addressed in the analyses of construction impacts throughout this DEIR/EIS. The applicant would be required to mitigate potential impacts, which would be negotiated between the applicant and SCE. Impacts to the Lugo-Pisgah Transmission Line would be reviewed and determined in the System Impact Study prepared by SCE. Therefore, potential impacts to the surrounding environment from the construction of on-site electrical facilities are considered to have no direct impacts. Potential beneficial indirect impacts could occur as a result of the Proposed action. The Proposed Project is anticipated to generate 70-MW or electricity per year, which is enough electricity to provide for approximately 10,000 residents, therefore, contributing to clean, renewable energy production.

Water Services

The Proposed Project would use some water during Project construction and operation. According to Table 3.13-A, the Proposed Project would require approximately 9,536 gallons per day (.029 acre feet per day) of water for construction and 1,825 gallons a year for operation, including fire protection. During construction, water would be used to control dust and for concrete. During operation, water would be provided by water trucks. A small water tank would be supplied on-site. Water would also be supplied by water trucks on an as-needed basis. Enough water would be provided for fire flow on the Project site in accordance to County regulations (MMUTL2). The construction of new or expanded water facilities is not required.

Table 3.13-A: Water Demand

WATER USE DURING CONSTRUCTION (CONSTRUCTION PERIOD LESS THAN 1 YEAR)	WATER USE DURING OPERATION (ANNUAL USE OVER 20 - 30-YEAR PERIOD)
906.164 gallons/day (concrete for foundations)	5 gallons/day
8,630.137 gallons/day (water for dust control)	
TOTAL: 9,536 GALLONS/DAY (10.68 ACRE FEET/YEAR)	**TOTAL: 1,825 GALLONS/YEAR***

Source: Water Supply Assessment for Granite Wind LLC, Section D-24 of the Conditional Use Permit Application to San Bernardino County, 2009.
* 5 gal/day x 365 days

Sewer Services

During construction, the Proposed Project would provide portable toilets for construction workers. The portable toilets would be replaced as needed. During operation, a septic tank would be provided for permanent employees. As a result, the Proposed Project would not impact the capacity of treatment facilities. Nor would the Proposed Project result in the construction of new or expanded sewer facilities.

Solid Waste

The Proposed Project would generate a limited amount of solid waste during construction. It is anticipated that the solid waste generated by Project construction would not have a substantial impact on local solid waste facilities. The amount of solid waste generated during operation of the Proposed Project would not be substantial or interfere with the sufficient permitted capacity of nearby landfills. However, MMUTL1 shall be implemented to ensure the Proposed Project stays in conformance with County regulations.

Construction waste would be disposed of by hauling to County solid waste facilities. However, these quantities are anticipated to be minimal (less than 2 tons) and would not significantly affect the County's existing landfill capacities. The Proposed Project would comply with all applicable federal, state, and local solid waste regulations and statutes. Since there are no habitable structures proposed for the Proposed Project, and WTG facilities are not considered a major generator of solid waste, potential impacts related to solid waste collection or disposal would have no direct or indirect impacts.

Telecommunication

The Proposed Project would require new overhead and underground fiber-optic cables from the Project substation to the Jasper Substation. A total of up to 5 miles of underground and overhead fiber-optic cable would be installed. These lines would be constructed using standard construction methods to construct the required fiber-optic cables.

Alternative Access Route 1A

No additional impacts are expected from the construction of Route 1A. Construction of the access road would require water for dust control and generate solid waste. The amount of water used is minimal and therefore not considered to be substantial to current water demands. With implementation of mitigation measure MMUTL1, effects to solid waste would not be considered substantial.

Alternative Access Route 1B

The same impacts as Alternative Access Route 1A would be expected, see the analysis above.

Alternative Jasper Substation 1A – Public Land

No additional impacts are expected from the construction of Substation 1A. Mitigation measure MMUTL3 to 5 would ensure that construction impacts to solid waste and water are not substantial.

Alternative Jasper Substation 1B – Private Land

No additional impacts are expected from the construction of Substation 1B, which is larger than Alternative 1A and would require more water for construction. However, the amount used is minimal and would not impact current water demands. Mitigation measures MMUTL1 and 2 would ensure that construction impacts to solid waste and water are not substantial.

Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development, ROW Application Denied, and CUP Not Approved

Under this alternative, BLM would amend the CDCA Plan to determine that the site is suitable for wind energy development, but would deny the ROW application for the Proposed Project, and the County would not approve the CUP for the Proposed Project. The site would remain in its present condition consisting of vacant desert lands, and impacts to current utilities and services systems in the area would not occur.

Alternative 3: Action On Amendment to CDCA Plan Determines Site Unsuitable for Wind Energy Development

Under this alternative, no changes to the current Project site and area would occur. BLM public lands and San Bernardino private lands would continue to be vacant and undisturbed. There would be no changes to current utilities and service systems in the area.

Alternative 4: No Action On Site Suitability and Proposed Project

Under the No Action Alternative, the Proposed Project would not be built and the Project site would remain undeveloped. There would be no changes to current utilities or service systems in the area.

3.14.5 Avoidance, Minimization, and/or Mitigation Measures

The Proposed Project would implement recommended BLM PEIS BMPs, which were adopted as part of the proposed Wind Energy Development Program to ensure minimal impact to natural and cultural resources. In addition to the BLM BMPs, Project-specific mitigation measures evaluated for their ability to eliminate or reduce the potential substantial adverse effects related to utility systems were developed for the Proposed Project.

BLM BEST MANAGEMENT PRACTICES

- All electrical collector lines shall be buried in a manner that minimizes additional surface disturbance (e.g., along roads or other paths of surface disturbance). Overhead lines may be used in cases where burial of lines would result in further habitat disturbance.

PROJECT-SPECIFIC MITIGATION MEASURES

MMUTL1: All refuse generated at the premises during construction and operation shall at all times be stored in approved containers and shall be placed in a manner so that environmental public health nuisances are minimized. All refuse not containing garbage shall be removed from the premises at least one (1) time per week, or as often as necessary to minimize public health nuisances. Refuse containing garbage shall be removed from the premises at least two (2) times per week, or as often as necessary to minimize public health nuisances, by a permitted hauler to an approved solid waste facility in conformance with San Bernardino County Code Chapter 8, Section 33.0830 et. seq. For information, please call DEHS/LEA at (909) 387-4655.

MMUTL2: On-site fire flow and water storage requirements shall be as specified by the County Uniform Fire Code.

3.14.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented

With implementation of the BMPs, Project-specific mitigation measures and all required regulations set forth in the regulatory settings of this section, all potential impacts of the Proposed Project related to water, sewer, and solid waste would not be considered substantial. However, impacts to electricity capacity would remain substantial.

3.15 HAZARDS AND HAZARDOUS MATERIALS

This section evaluates hazardous materials as well as potential hazards to the public and the environment from the construction and operation of the Granite Mountain Wind Energy Project by considering short-term impacts from construction-phase activities and long-term impacts from operation and maintenance activities. This section also reviews the direct and indirect impacts of the Proposed Project to the public and the environment. Health and safety hazards discussed in this section include hazardous materials, microwave, radar, air traffic, fire hazards, and emergency response. An investigation was conducted to evaluate whether hazardous materials or petroleum products are likely to be present within the Project area footprint or are likely to exist in the future due to on-site or nearby activities. Hazardous materials include chemicals, fuels, oils, solvents, and other petroleum products, as well as any soil or groundwater contamination due to chemical releases.

The potential for pre-existing hazards or hazardous materials on the Project site was also investigated. The activities performed for this investigation included a site reconnaissance; researching historical information to assess the use, storage, or disposal of hazardous materials and petroleum products; reviewing databases generated by regulatory agencies; and interviewing individuals having knowledge of site activities. Historical information was obtained through an environmental questionnaire completed by the owner of the private parcel (APN 0464-061-06-0000) and a review of historical aerial photographs and topographic maps.

3.15.1 Impact Criteria

Potential impacts from hazards and hazardous materials could occur if reasonably foreseeable future actions were to result in any of the following:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of a hazardous material into the environment;
- Reasonably foreseeable future actions emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25-mile of an existing or proposed school;
- Reasonably foreseeable future actions are located on a site which is included on a list of hazardous materials sites compiled by the federal or state government and, as a result, would create a hazard to the public or the environment;
- Reasonably foreseeable future actions create an interference with microwave paths and radar signals;
- Reasonably foreseeable future actions create a hazard to navigable airspace;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or private airport, result in a safety hazard for people residing or working in the project area; or
- Impair implementation or physically interfere with emergency response plans or emergency evacuation plans.

3.15.2 Regulatory Setting

The Proposed Project would be in compliance with applicable laws, ordinances, and regulatory standards for hazards and hazardous materials during construction and operation of the proposed facilities. Emergency response procedures would be coordinated between facility personnel and local emergency planning and response organizations.

The following is a summary of applicable regulatory requirement related to hazardous material handling:

Federal Regulations

- Clean Air Act, Section 112(r): Risk Management Plan requirements, U.S. EPA.
- CERCLA/SARA, 40 CFR Part 68.115: Reporting requirements for storage, handling, or production of significant quantities of hazardous or acutely hazardous materials, U.S. EPA.
- 29 CFR Sections 1910 and 1926: Protect workers by meeting the requirements for equipment to store and handle hazardous materials, U.S. EPA, Cal-OSHA.

The National Defense Authorization Act for Fiscal Year 2006

The National Defense Authorization Act 2006 (PL 1109-163) requires the Department of Defense to study and report on the effects of wind projects on military readiness. Department of Defense (DOD) implemented the "The DOD/DHS Long Range Radar Joint Program Office Interim Policy," which contests the development of any wind energy project within radar line of site of the National Air Defense and Homeland Security Radars in order to address concerns about the potential interference with military radar operations. DOD would evaluate wind projects on a case-by-case basis in coordination with the Federal Aviation Administration (FAA).

Federal Aviation Regulation Part 77

Under Federal Aviation Regulations Part 77, a structure is an obstruction to air navigation if its height is more than:

- 500 ft above ground level at the site of the structure, or
- 200 ft above ground level or above the established airport elevation, whichever is higher, within three nautical miles of the established reference point of any airport.

Any entity proposing to construct an object that exceeds 200 ft in ground level and that might affect navigable airspace must notify the FAA. The FAA is required to consult with the military before it can issue a determination.

United States Air Force AICUZ Program Manager's Guide

Edwards AFB Air Installation Compatible Use Zones (AICUZ) Study is intended to protect community health and safety and to promote appropriate development in the area of the military airfields.

FLPMA Right of Way Conditions in Title 43 Sec. 504. [43 U.S.C. 1764] (a) (3) & Sec. 505. [43 U.S.C. 1765] (a)(iv) & (b)(iii):

Sec. 504. [43 U.S.C. 1764] (a) (3): The Secretary concerned shall specify the boundaries of each right-of-way as precisely as is practical. Each right-of-way shall be limited to the ground which the Secretary concerned determines to be necessary to protect the public safety.

Sec. 505. [43 U.S.C. 1765] (a)(iv) & (b)(iii): Each right-of-way shall contain terms and conditions (a)(iv) which will require compliance with state standards for public health and safety, environmental protection, and siting, construction, operation, and maintenance of or for rights-of-way for similar purposes if those standards are more stringent than applicable federal standards; and (b) (iii) such terms and conditions as the Secretary concerned deems necessary to protect lives and property;

State Regulations

California Health and Safety Code 25531-25543: Final Cal/ARP Regulations, Title 19, Division 2, Chapter 4.5, Sections, 2735-2785

Requires the preparation of a Risk Management Plan for regulated substances on-site and a Hazardous Materials Plan as required by the State Department of Toxic Substances Control and State Regulatory Programs Division.

The Department of Toxic Substances Control (DTSC)

DTSC is the state agency that regulates the handling, storage, and disposal of hazardous materials within local jurisdictions within the state of California. DTSC has one Hazardous Substances Scientist in each of its four regional offices.

State Aeronautics Act

Under the State Aeronautics Act, the State Division of Aeronautics has enforcement power regarding FAR Part 77. Chapter 4, Article 2.7 of the Aeronautics Act, which prohibits any person from constructing any structure or permitting any growth of a height that would constitute a hazard to air navigation as defined in FAR Part 77 unless a state or federal exemption is obtained.

Local Regulations

California Code of Regulations Title 8 Section 5189

Develop and implement safety management plans and risk management plans, San Bernardino County Fire Department Hazardous Materials Division.

Uniform Fire Code Article 80

Requires secondary containment, monitoring, and treatment for accidental releases of toxic gases to the San Bernardino County Fire Department Hazardous Materials Division.

San Bernardino County Policy S 8.1 to Ensure the Safety of Airport Operations and Surrounding Land Uses.

This policy requires continued Airport Safety Reviews of all land uses proposed within any Airport Safety Area in the County and updating existing and initiating new comprehensive

Land Use Plan studies for each public use airport in the County. The following review standards shall be included:

- Regulations of Federal Aviation Regulations (FAR) Part 77 shall be applied, including height restrictions.

Apple Valley Draft Comprehensive Airport Land Use Compatibility Plan

Apple Valley Draft Comprehensive Airport Land Use Compatibility Plan establishes two safety zones, the Airport Master Plan Area and the Airport Overlay Districts A-1 and A-2, to protect public safety. This plan has been developed by the Town of Apple Valley to be consistent with other land uses in the area. Legal authority lies with the Town of Apple Valley and San Bernardino County planning managers. Although the Project site is outside of the area covered by the Airport Land Use Compatibility Plan, comments of the Airport Manager shall be considered in evaluation of the Proposed Project.

3.15.3 Affected Environment

HAZARDOUS MATERIALS

A Hazardous Materials Assessment Summary evaluates whether there is a potential for certain hazardous materials to exist on the properties via a records search, site reconnaissance, interviews, and review of aerial photographs and historical maps. A Hazardous Materials Assessment Summary of the Granite Mountain Wind Energy Project was completed by URS Corporation on November 3, 2008. The extent of the assessment consisted of the proposed wind turbine locations, Proposed Project substation location, Access Route 1A, and the proposed interconnection with Southern California Edison's 220-kV Lugo-Pisgah line. During research by URS, various public agencies and individuals were contacted to provide information regarding the previous and current uses of the Project site with respect to hazardous materials and wastes. In addition, federal, state, and local databases were reviewed to ascertain the presence of known environmentally impaired sites within one mile of the property and to determine their impact to the Project site.

Regulatory Database Findings

Information gathered from environmental databases through Environmental Data Resources, Inc. (EDR) was reviewed to evaluate whether activities on or near the subject property have the potential to create adverse environmental impacts on the Project site. EDR reviews databases compiled by federal, state, and local government agencies. Minimum search distances and the types of databases required for review were based on the American Society for Testing and Materials (ASTM) Standard E 1527-05. No nearby facilities listed by various environmental regulatory agencies in the EDR report handled, stored, or disposed hazardous materials and/or wastes, and no recognized environmental concerns have been identified on the Project footprint.

Site Reconnaissance

A reconnaissance of the subject property and of the immediately surrounding areas was conducted on October 21, 2008, and October 23, 2008. The Project site visit consisted of a walking tour of the subject property. Indications of the presence of hazardous materials or contamination were not observed on-site or on properties adjoining the Project site during the Project site visit.

Regulatory Agency Findings

Requests for information were submitted to regulatory agencies with oversight responsibility for releases of hazardous materials and petroleum hydrocarbons that may have occurred on or near the Project area. To date, there have been no agency responses indicating releases. Based on the information obtained and reviewed to date, the potential for agency information indicating the presence of on-site or nearby releases appears to be low.

Surrounding Facilities

Pipelines: High-pressure petroleum pipelines jurisdictional to the State Fire Marshal are not reported to exist in the Project site vicinity. Additionally, oil and natural gas lines in the Project site vicinity were not listed in environmental database report provided by EDR.

Historic Wells: The occurrence of historical wells was reviewed within the Project area where grading and earth movement was to occur. This review included water wells and abandoned oil and gas wells. During review of existing data, no abandoned oil or gas wells were identified with the Project area of influence.

Hazards

The Proposed Project is situated in the South Central Mojave Desert Region. The Project site and surrounding properties are located on undeveloped land that is sparsely populated. The nearest town, Apple Valley, is 6 miles to the west, and the nearest residence is located 1.16 miles west of the Project site. The Project site is located 8 miles from the Apple Valley public use airport and 55 miles from Edwards AFB. Currently, designated OHV trails and undesignated pedestrian trials provide access to and around the Project area. These trails are not maintained by the city, County, or the BLM; however, access management to these trails would be implemented during construction to ensure public safety.

The proposed 28 WTGs would be 80 meters (262 feet) tall (hub height) above existing grade. The blades of the proposed turbines would extend an additional 50.5 meters (166 feet) above the hub, for a total blade tip height of 130.5 meters (428 feet) above existing grade.

Energy from the Proposed Project would interconnect into the Southern California Edison 220-kV Lugo-Pisgah transmission line. An unimproved road would be developed in conjunction with the construction of the transmission line for SCE access to provide maintenance of the line. Two alternatives have been identified: one located southeast of the Project site on public-owned lands to include a 3.2-mile transmission line, and one located east of the Project site on privately-owned lands to include a transmission line of approximately 4.2 to 4.7 miles.

Microwave

Wind turbines may interfere with microwave beams at the Project site. Interference occurs when turbines obstruct the path of a microwave beam and either reflect or diffract the signal. Any structure has the potential to interfere with microwave beams; however, WTGs are more likely to generate interference due to their large swept rotor area.

Radar

WTGs can interfere with radar signals. Historically, wind projects in the U.S. have been delayed due to concern about potential interference between WTGs and radar operations,

including military, airport, and weather radar. WTGs can create what is known as "turbine clutter," a phenomenon that occurs when radar signals are bounced off of the moving blades and other parts of the turbines and creates false signals that appear as a blacked out area on radar. It is difficult to track planes through "turbine clutter." On Doppler (weather) radar the "turbine clutter" is translated as a storm.

The FAA has released a Web-based DoD Preliminary Screening Tool for Long Range Radar (LRR), weather (NEXRAD), and Military Operations clearance analyses (FAA, 2009). For LRR and NEXRAD, Project site coordinates can be entered into the tool to determine whether the site is in a no-problem area (green zone), a possible problem area (yellow zone), or a definite problem area (red zone). Placement of turbines in yellow or red zones would require further consultation with the FAA and require an aeronautical study.

Airports

According to the General Plan Circulation Element, local airports include the Barstow-Daggett Airport, the Southern California Logistics Airport, and the Apple Valley Airport. Due to its distance from the Project site, the Barstow-Daggett Airport will not be discussed in this analysis. The Southern California Logistics Airport and the Apple Valley Airport are located approximately 19 miles and 8 miles, respectively, from the Project site. The Draft Comprehensive Airport Land Use Compatibility Plan for the Apple Valley Airport, the closest airport to the Project site, delineates the immediate area surrounding the airport into two "land use overlay districts." These overlay districts ensure land use compatibility with the Apple Valley Airport areas required under state and federal regulations. The Project site is located approximately 1.5 miles from the nearest boundary or furthermost A-2 overlay district.

Military airports near the Project site include Edwards AFB and the Marine Corps Air Ground Combat Center (MCAGCC) in Twentynine Palms. Edwards AFB is located over 50 miles northwest of the Project site. The MCAGCC is located approximately 56 miles southeast of the Project site. The DoD Preliminary Screening Tool was used to determine if the Project site is likely or not likely to cause impacts to military airspace for each military service branch.

Objects that are over 200 ft in elevation (such as wind turbines) can create a hazard to navigable airspace. The WTGs proposed for this Project would be 80 meters (262 feet) tall (hub height), 130.5 meters (428 feet) total blade height above existing grade, and would need to comply with Federal Aviation Regulations Part 77.

Emergency Response Plan

County Office of Emergency Services (OES) is responsible for developing emergency operation plans (EOPs) and actions in response to actual or potential disasters that may impact the County, City/Town governments, Special Districts, unincorporated communities, business, and industries within San Bernardino County. County OES designs and conducts exercises for different scenarios and coordinates emergency management training to ensure that the County is able to respond to natural, human caused, and technological emergencies. OES coordinates the interagency response for a wide range of emergencies, including earthquake, terrorism, wildfires, flooding, extreme heat and severe weather, utility outages, droughts, transportation accidents, hazardous materials releases, and civil unrest.

County OES fulfills a wide variety of roles, from the field response to emergency incidents within the County, to operating the County EOC in supporting and recovering from major emergencies and disasters. All County OES activities are focused around the four primary phases of emergency management: mitigation, preparedness, response, and recovery. OES is the lead agency in fulfilling the County's responsibility under the California Emergency Services Act (Chapter 7 of Division 1 of Title 2 of the CA Government Code) and also serves as the Operational Area Coordinator for Riverside County under the Standardized Emergency Management System (CA Government Code 8605).

Fire Prevention and Control

Wind turbines, due to their height, physical dimensions, and complexity, have the potential to present response difficulties to local emergency service providers and fire departments. Although the turbines contain relatively few flammable components, the presence of electrical generating equipment and electrical cables, along with various oils (lubricating, cooling, and hydraulic) creates the potential for fire or a medical emergency within the tower or the nacelle. This, in combination with the elevated location of the nacelle and the enclosed space of the tower interior, makes response to a fire or other emergency difficult and beyond the capabilities of most local fire departments and emergency service providers.

Other project components create the potential for a fire or medical emergency due to the storage and use of diesel fuels, lubricating oils, and hydraulic fluids. Storage and use of these substances may occur at the substation, in electrical transmission structures, staging area(s), and the O&M building/facility. However, due to the accessibility of these areas, response to an emergency should not prove difficult to local fire and emergency personnel. However, the presence of potentially hazardous materials as well as high-voltage electrical equipment present potential safety risks to local responders.

During the construction of the Proposed Project, fire prevention would be managed by the use of an emergency plan. In addition, Granite Wind, LLC has documented safety procedures in place for the management of work situations where fire presents a hazard (e.g., hot works), and Granite Wind staff would undertake safety audits at least once a week during construction to ensure that, amongst other things, there are sufficient fire extinguishers deployed throughout the Project site.

During operations, the operations and maintenance contractor would ensure that sufficient fire extinguishers were deployed in the base and nacelle of the wind turbines and in the operations and maintenance building and the substation.

3.15.4 Environmental Consequences

In this DEIS/EIR, Project alternatives are evaluated based on their potential to pose a health or safety hazard, in accordance with the criteria listed in Section 3.15.1.

Alternative 1: Proposed Project

Alternative 1, the Proposed Project, would consist of the construction of 28 WTGs, access roads, substations, transmission lines, an O&M building, and meteorological towers. Two access road alternatives and two substation alternatives are proposed under Alternative 1.

Hazardous Materials

Exposure of persons to hazardous materials could occur through the following scenarios: improper handling or use of hazardous materials or hazardous wastes during construction or operation of the Proposed Project, particularly by untrained personnel; transportation accident; environmentally unsound disposal methods; or fire, explosion, or other emergencies. The nature of the Proposed Project is such that minimal hazardous substances would be stored or used on-site. There is a risk of spillage of hazardous materials and petroleum products in the Project vicinity during construction or operation of the facility. The cleanup of any minor spills or releases of these products is part of normal operations. All new developments that handle or use hazardous materials would be required to comply with the regulations, standards, and guidelines established by the EPA, state, and County of San Bernardino related to storage, use, and disposal of hazardous materials. The Proposed Project would not include activities that would result in hazardous emissions or require handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile (1,320-feet) of an existing or proposed school.

Based on the findings of the Hazardous Materials Assessment Summary, the Proposed Project exhibits no evidence of recognized environmental conditions and contains no locations that are listed as a hazardous materials site. No nearby facilities listed by various environmental regulatory agencies handled, stored, or disposed hazardous materials and/or wastes and no Recognized Environmental Concerns have been identified on the Project footprint. However, construction of the Proposed Project would require excavation of areas for foundation construction in or near unreported spill sites, which may result in the need for removal of potentially contaminated materials. Potentially contaminated materials are expected to be localized and visibly recognizable. Residual petroleum hydrocarbons are typically thick and black in color, and based on discoloration can be isolated and avoided, or can be excavated and segregated easily from clean soil material. In the unlikely event that contamination is encountered within foundation footprints, its extent would be identified, excavated, and addressed according to applicable state and federal regulations. Areas with known spill sites and areas where stain or odiferous soils are encountered would be monitored by the Environmental Site Monitor during Project construction. Proper implementation of these procedures would reduce potential adverse impacts to these areas. In addition, implementation of BLM BMPs and Mitigation Measures MMHAZ1 through MMHAZ4 would further reduce potential adverse impacts resulting from hazardous materials.

Hazards

Public access to the Project site during construction could result in public health hazards. Therefore, the Project health and safety program shall establish a safety zone or setback for WTGs from residences and occupied buildings, roads, rights-of-ways, and other public access areas that is sufficient to prevent accidents resulting from the operation of wind turbine generators. The program would identify and implement requirements for temporary fencing around staging areas, storage yards, and excavations during construction or decommissioning activities. It would also take measures during the operation phase to limit public access to hazardous facilities (e.g., permanent fencing installed only around electrical substations, meteorological towers and turbine tower access doors locked). Therefore, the potential adverse impacts to public health would be reduced. In addition, implementation of BLM BMPs and Mitigation Measures MMHAZ1 through MMHAZ4 would further reduce potential public hazards.

Microwave

A microwave study for the Granite Mountain Wind Energy Project area was conducted by Comsearch on July 24, 2007 (Comsearch, 2007). This study was intended to identify microwave paths in the vicinity of the Proposed Project to avoid locating WTGs within microwave paths. Study results identified 16 microwave beam paths near the Project site. However, none of the microwave beam paths cross the Project site near locations of any of the currently planned WTGs. A final microwave study would be performed prior to approval of the finalized locations and installation of the WTGs.

Radar

Each turbine location has been analyzed using the DOD Preliminary Screening Tool. For LRR and NEXRAD, the analysis indicated that every turbine location is classified as "yellow," meaning that the coordinate is likely to cause an impact with National Air Defense and Homeland Security Radars. An aeronautical study has been prepared in accordance with Federal Aviation Regulations Part 77, and a No Hazard Determination has been issued for each proposed WTG (Appendix N). If WTG locations change, a new aeronautical study and a new No Hazard Determination would need to be issued for each new WTG. Thus, potential adverse impacts to radar or military operations are not anticipated. In addition, all necessary FAA permits would be obtained for the Proposed Project.

Airports

The Granite Mountain Wind Energy Project does not intrude on compatibility zones established by Apple Valley Airport and the Southern California Logistics Airport, and no potential adverse public safety impacts are expected. An aeronautical study has been prepared in accordance with Federal Aviation Regulations Part 77, and a No Hazard Determination has been issued by the FAA for each proposed WTG. In compliance with FAA regulations, WTGs would be painted white and certain WTGs would also have synchronized red lights. Since the FAA is required to coordinate with the military as part of the No Hazard Determination process and no issues were raised, the Proposed Project is not expected to conflict with the existing military airspace

Emergency Response Plan

According to the location and geography, SR-247 is the current evacuation route for the Proposed Project and surrounding properties. Surrounding cities, including Apple Valley and the community of Lucerne Valley, along with the unincorporated San Bernardino County areas, are contracted with the San Bernardino County Fire Department for emergency response. San Bernardino County Fire Department, Hazmat Division, is the designated Certified Unified Program Agency (CUPA) for the Proposed Project vicinity. BLM has an emergency response plan for all public lands within the CDCA, and the Proposed Project is consistent with those plans. There are currently no adopted emergency response plans or emergency evacuation plans specific to the Proposed Project footprint. However, the San Bernardino County Office of Emergency Services, a Division of the County Fire Department, is responsible for the development and implementation of the EOP for the County, which would include the Project area. Project development would not interfere with existing emergency response and evacuation plans. A Project-specific public health and safety plan is required prior to initiation of Project construction activities. This plan would be approved by the authorizing agencies, including the BLM and San Bernardino County Fire Department.

Alternative Access Route 1A

Construction of Alternative Access Route 1A may include minimal handling or use and storage of hazardous substances. Any potential use of hazardous materials would be regulated by federal and state requirements. Therefore, no potential adverse impacts related to the handling of hazardous materials or hazardous emissions are expected. In addition, Route 1A is not located within a quarter mile of an existing or proposed school. Furthermore, Access Route 1A is not located within compatibility zones established by Apple Valley Airport and the Southern California Logistics Airport and would not result in potential adverse safety impacts to the public. Access Route 1A would also be consistent with BLM's emergency response plan for the Project area and would comply with the Project-specific public health and safety plan. Therefore, construction of Access Route 1A would not result in potential adverse impacts to public health and safety

Alternative Access Route 1B

Environmental impacts would be the same as those of Alternative Access Route 1A, see the analysis above.

Alternative Jasper Substation 1A – Public Land

Construction of Substation 1A may include minimal handling or use and storage of hazardous substances. Any potential use of hazardous materials would be regulated by federal and state requirements. Mitigation measures MMHAZ1 through 4 would further reduce potential impacts. Therefore, no potential adverse impacts related to the handling of hazardous materials or hazardous emissions are expected. In addition, Substation 1A is not located within a quarter mile of an existing or proposed school. Substation 1A is not located within compatibility zones established by Apple Valley Airport and the Southern California Logistics Airport and would not result in potential adverse safety impacts to the public. Substation 1A would also be consistent with BLM's emergency response plan for the Project area and would comply with the Project-specific public health and safety plan. Therefore, construction of Substation 1A would not result in potential adverse impacts to public health and safety

Alternative Jasper Substation 1B – Private Land

Environmental impacts would be the same as those of the Substation Alternative 1A, see the analysis above.

Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development, ROW Application Denied, and CUP Not Approved

Under this alternative, BLM would amend the CDCA Plan to determine the site is suitable for wind energy development, but would deny the ROW application for the Proposed Project, and the County would not approve the CUP for the Proposed Project. The site would remain in its present condition consisting of vacant desert lands, and impacts related to hazards and hazardous materials would not occur.

Alternative 3: Action on Amendment to CDCA Plan Determines Site Unsuitable for Wind Energy Development

Under Alternative 3, wind energy development would not be allowed and no changes would occur to the current Project site. BLM public lands and San Bernardino private lands would continue to be vacant and.

Potential adverse impacts from hazards and hazardous materials would not occur under this alternative.

Alternative 4: No Action on Site Suitability and Proposed Project

Under the No Action Alternative, no changes to the current Project site or Project area would occur. BLM public lands and San Bernardino private lands would continue to be vacant and undisturbed. Therefore, potential adverse impacts would not occur.

3.15.5 Avoidance, Minimization, and/or Mitigation Measures

The Proposed Project would implement recommended BLM PEIS BMPs, which were adopted as part of the proposed Wind Energy Development Program to ensure minimal impact to natural and cultural resources. No Project-specific mitigation measures were evaluated. Impacts to hazards and hazardous materials were not considered substantial.

BLM BEST MANAGEMENT PRACTICES

- In the event of an accidental release of hazardous materials to the environment, the operator shall document the event, including a root cause analysis, appropriate corrective actions taken, and a characterization of the resulting environmental or health and safety impacts. Documentation of the event shall be provided to the BLM-authorized officer and other federal and state agencies, as required.
- Secondary containment shall be provided for all on-site hazardous materials and waste storage, including fuel. In particular, fuel storage (for construction vehicles and equipment) shall be a temporary activity occurring only for as long as is needed to support construction activities.
- Wastes shall be properly containerized and removed periodically for disposal at appropriate offsite-permitted disposal facilities.
- A health and safety program shall be developed to protect both workers and the general public during construction, operation, and decommissioning of a wind energy project. Regarding occupational health and safety, the program shall identify all applicable federal and state occupational safety standards; establish safe work practices for each task (e.g., requirements for personal protective equipment and safety harnesses, Occupational Safety and Health Administration [OSHA] standard practices for safe use of explosives and blasting agents, and measures for reducing occupational electric and magnetic fields [EMF] exposures); establish fire safety evacuation procedures; and define safety performance standards (e.g., electrical system standards and lightning protection standards). The program shall include a training program to identify hazard training requirements for workers for each task and establish procedures for providing required training to all workers. Documentation of training and a mechanism for reporting serious accidents to appropriate agencies shall be established.
- Regarding public health and safety, the health and safety program shall establish a safety zone or setback for wind turbine generators from residences and occupied buildings, roads, rights-of-ways, and other public access areas that is sufficient to prevent accidents resulting from the operation of wind turbine generators. It shall identify requirements for temporary fencing around staging areas, storage yards, and excavations during construction or decommissioning activities. It shall also identify measures to be taken during the operation phase to limit public access to hazardous

facilities (e.g., permanent fencing installed only around electrical substations, and turbine tower access doors locked).

- A safety assessment shall be conducted to describe potential safety issues and the means that would be taken to mitigate them, including issues such as site access, construction, safe work practices, security, heavy equipment transportation, traffic management, emergency procedures, and fire control.

Construction BMPs

- A final microwave study will be performed prior to approval of the finalized locations and installation of the wind turbine generators to avoid the sixteen (16) microwave beans near the Project site.
- WTGs shall be white or other appropriate mechanism for visibility, and certain WTGs shall also have synchronized red lights as required by the FAA No Hazard Determinations.
- The FAA-required notice of proposed construction shall be made as early as possible to identify any required air safety measures.
- Any wastewater generated in association with temporary, portable sanitary facilities shall be periodically removed by a licensed hauler and introduced into an existing municipal sewage treatment facility. Temporary, portable sanitary facilities provided for construction crews shall be adequate to support expected on-site personnel and shall be removed at completion of construction activities.
- Temporary fencing shall be installed around staging areas, storage yards, and excavations during construction to limit public access.

Operation BMPs

- Operators shall develop a Hazardous Materials Management Plan addressing storage, use, transportation, and disposal of each hazardous material anticipated to be used at the site. The plan shall identify all hazardous materials that would be used, stored, or transported at the site. It shall establish inspection procedures, storage requirements, storage quantity limits, inventory control, non-hazardous product substitutes, and disposition of excess materials. The plan shall also identify requirements for notices to federal and local emergency response authorities and include emergency response plans.
- Operators shall develop a waste management plan identifying the waste streams that are expected to be generated at the site and addressing hazardous waste determination procedures, waste storage locations, waste-specific management and disposal requirements, inspection procedures, and waste minimization procedures. This plan shall address all solid and liquid wastes that may be generated at the site.
- Operators shall develop a spill prevention and response plan identifying where hazardous materials and wastes are stored on-site, spill prevention measures to be implemented, training requirements, appropriate spill response actions for each material or waste, the locations of spill response kits on site, a procedure for ensuring that the spill response kits are adequately stocked at all times, and procedures for making timely notifications to authorities.

- The Project shall be planned to comply with FAA regulations, including lighting regulations, and to avoid potential safety issues associated with proximity to airports, military bases or training areas, or landing strips.
- Operators shall develop a fire management strategy to implement measures to minimize the potential for a human-caused fire and respond to natural fire situations.
- Permanent fencing shall be installed and maintained around electrical substations, and turbine tower access doors shall be locked to limit public access.
- In the event an installed wind energy development project results in electromagnetic interference (EMI), the operator shall work with the owner of the impacted communications system to resolve the problem. Additional warning information may also need to be conveyed to aircraft with onboard radar systems so that echoes from wind turbines can be quickly recognized.

3.15.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented

With implementation of the above-listed BLM BMPs and mitigation measures, the Proposed Project would not result in potential adverse impacts related hazards and hazardous materials.

This page intentionally left blank.

3.16 PALEONTOLOGICAL RESOURCES

Paleontological resources, for the purposes of NEPA and CEQA, may be defined as remains or other indications (trace fossils) of prehistoric organisms such as animals and plants; also included are the accompanying data that provide taphonomic, taxonomic, phylogenetic, ecologic, and stratigraphic information. Three scientific tasks cannot be accomplished without these resources: (1) establishing the relative ages of geologic horizons that contain them, (2) reconstructing the ancient environments that these organisms inhabited, and (3) detecting the existence, distribution, and evolutionary trends of diverse types of organisms, many of which are now extinct.

3.16.1 Impact Criteria

Paleontological guidelines from different agencies were used to prepare this analysis. Guidelines from CEQA as well as guidance from San Bernardino County (including the community of Lucerne Valley) and the Town of Apple Valley were considered. Guidelines set forth in the Society of Vertebrate Paleontology Standard Guidelines were also considered.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) OF 1970

The potential risk of direct and indirect impacts affecting paleontological resources is assessed with respect to one criterion. Potential impacts to paleontological resources could occur if reasonably foreseeable future actions were to:

- Directly or indirectly destroy a unique paleontological resource or site.

SOCIETY OF VERTEBRATE PALEONTOLOGY (SVP)

The SVP Standard Guidelines on assessment and mitigation of adverse impacts to nonrenewable paleontological resources do not provide any thresholds of significance for adverse impacts, but they do define significant non-renewable paleontological resources (one or more identifiable vertebrate fossils, any associated invertebrate and plant fossils, traces, and other data the provide taphonomic, taxonomic, phylogenetic, ecologic, and stratigraphic information generated by vertebrate animals) and significant fossiliferous deposits (a rock unit or formation that contains significant paleontological resources). The sense of the statements can be stated thus:

- Directly or indirectly destroy an identifiable vertebrate fossil or the scientific information associated with it.

3.16.2 Regulatory Setting

Federal Regulations

The Antiquities Act of 1906 is used as the basis for federal protection of paleontological resources on federal lands. The act authorizes the government to regulate the disturbance of objects of antiquity on federal lands through the responsible managing agency and to prosecute unauthorized damage or removal. NEPA (1969) requires that important natural aspects of our national heritage be considered in assessing the environmental consequences of any proposed project. The Federal Land Policy Management Act of 1976 (P.L. 94-579; 90 Stat. 2743, U.S.C. 1701-1782) requires that public lands be managed in a manner that protects the quality of their scientific values. Paleontological resources are also afforded federal protection under 40 Code of Federal Regulations 1508.27 as a subset of

scientific resources. The Paleontological Resource Preservation Act (PRPA) of 2009 specifically protects paleontological resources on federal lands, specifies which departments are in charge of these resources, provides for casual collecting and permitting of scientific collecting, provides for the curation of these resources, specifies which activities are violations, and establishes penalties for those acts. These regulations apply not only to paleontological resources on federal lands, but also to projects having a federal nexus. These laws are applicable to the Proposed Project because a majority of the property involved is managed by the BLM. The survey of the lands in and around the Proposed Project was conducted under a Scientific Paleontological Collecting Permit (CA-08-00-009P to Joe Stewart) from the California State Office of the BLM.

State Regulations

California Environmental Quality Protection Act of 1970 (CEQA) applies to projects within California. The Cultural Section of CEQA does not specifically address paleontological resources, but the Guidelines for the Implementation of the CEQA, as amended in 2004, include a standard checklist which requires proponents and regulators to determine whether the Proposed Project would directly or indirectly destroy a unique paleontological resource or site. A paleontological mitigation plan is mandated if the answer is “yes” or “possibly.”

Local Regulations

The County of San Bernardino General Plan specifically addresses paleontological resources in its Open Spaces and Conservation Element. Policies in this section seek to preserve the historical, archeological, paleontological, geological, and cultural resources of the County through development review, acquisition, encouragement of easements, coordination with other agencies and groups, and other methods. The County of San Bernardino Development Code specifies several actions for development in areas where paleontological resources might occur. These actions include field survey before grading, monitoring during grading, proper preparation, stabilization, identification, and curation of specimens collected, and reporting of findings.

3.16.3 Affected Environment

Methodology

Methods used to develop the paleontological resource inventory of the Proposed Project are described below. These procedures are in keeping with the guidelines of SVP (1995) and include both a literature search and field investigation.

Published literature concerning area paleontological and geological topics was consulted. From such literature, it is possible to define the surface distribution of the formations involved, to estimate their subsurface distribution, and gain some estimate of the paleontological productivity of these units. Another important source for data concerning aerial distribution of known paleontological localities and productivity of various rock units are the records of pertinent paleontological collections. An archival database search was executed by the Natural History Museum of Los Angeles County (LACM) and the San Bernardino County Museum (SBCM) to determine whether any of the stratigraphic units found within the Project vicinity had previously yielded significant paleontological resources and whether any known localities lie within or near the Proposed Project.

A partial field survey for any visible fossil remains within a 1-mile radius of the Project Site was begun on March 3, 2009, by URS Corporation. A search was made for exposures of

sediment appropriate for producing fossils. During the field survey, attempts were made to detect the presence and natures of surface and subsurface native sediments. Areas of obvious granitic rocks were not surveyed, except where necessary to reach other areas. Granite, like all intrusive igneous rocks, has a low sensitivity for paleontological resources according to SVP Guidelines (1995).

Existing Conditions

The Proposed Project lies within the Mojave Desert geomorphic province, within the eastern Granite Mountains. The geology of the area was mapped by Bortugno and Spittler (1986) at a scale of 1:250,000 and by Dibblee (2008) at a scale of 1:24,000. Bortugno and Spittler map the igneous rocks forming the core of the highlands where the wind turbines would be sited as Cretaceous or Jurassic quartz monzonite of Pleasant View Ridge (CDMG, 1886) and Strawberry Peak (Miller, & Matti, 2001) with two restricted areas of Mesozoic metavolcanic rocks and Metasedimentary deposits within northern portion of the Project area. Dibblee maps the igneous geology as mostly granite and quartz monzonite with a small area of latitic porphyry, a subset of metamorphosed porphyritic igneous intrusives. Bortugno and Spittler recognize three categories of Quaternary sediments in the immediate area: mainly undifferentiated Quaternary alluvium with one small area of Pleistocene aged alluvium and two more distant basins with Quaternary lake sediments. Dibblee similarly shows a predominance of “alluvial silt, sand, and gravel of valley areas” with two small areas of older gray gravel of unsorted detritus and the more distant basins of “clay of playa lakes.”

The literature search produced no mention of fossil occurrences in the immediate vicinity of the Proposed Project. The compilations of Jefferson (1991a, 1991b) show no Pleistocene localities in the area, except those mentioned below in the LACM records search results.

The records search from the LACM (Appendix O) found no known paleontological localities in the Proposed Project area, but did have some small fossil vertebrates from a pipeline from Little Rock east nearly to the Nevada border through either Quaternary Alluvium or older Quaternary sediments. The SBCM records search (Appendix O) found no paleontological localities within the Project boundaries, nor within several miles in any direction.

The LACM records search concluded that igneous and metamorphic rocks will not contain fossils. Likewise, the Quaternary alluvial fans around the flanks of Granite Mountain are unlikely to produce significant paleontological resources, but the report states that the Quaternary sediments of the intermittent drainages and the lacustrine deposits could produce fossils below the surface. The records search from the SBCM likewise concluded that the igneous and metamorphic rocks have no potential to produce significant paleontological resources. However, the SBCM records search assigned a low potential to all of the Quaternary sediments adjacent to Granite Mountain, but did not mention the Older Alluvium or the playa deposits.

The pedestrian survey of the Project site and periphery yielded no indications of any fossils. Older Alluvium occurs at only two places: in sections 11 and 12 of Township 5 North, Range 2 West. The most likely areas for significant paleontological resources would be in the Older Alluvium or at depth in the lacustrine sediments. However, these are beyond the immediate Project area, and would not be impacted by planned turbine construction, access roads, or substation.

3.16.4 Environmental Consequences

Alternative 1: Proposed Project

The records searches' assessments of the paleontological sensitivity of the igneous and metamorphic rocks of the area are undoubtedly correct. The Society of Vertebrate Paleontology's Conformable Impact Mitigation Committee has issued guidelines for assessment and mitigation of adverse impacts to nonrenewable paleontological resources (SVP, 1995). These guidelines utilize a tripartite system for rating the likelihood of a rock unit to produce significant paleontological resources (paleontological sensitivity). Under the rating system proposed by the SVP, the igneous and metamorphic rocks should be rated as low. The BLM has formulated a different rating system (BLM, 2008). Under their Potential Fossil Yield Classification (PFYC) system, the igneous and metamorphic rocks should be rated as Class 1 (very low).

The LACM records search indicates some paleontological sensitivity for subsurface lacustrine sediments and for subsurface Quaternary sediments in the intermittent drainages. The SBCM records search seemingly lump all the Quaternary sediments and assign them a low sensitivity rating because of insufficient age. Inasmuch as there are no known records of fossils from the lacustrine sediments or from the Quaternary sediments of the intermittent drainages, the sensitivity of these is essentially unknown. Thus, they should be rated as undetermined in the system advocated by the SVP and given a Class 3B (unknown) rating in the PFYC system. The Quaternary alluvium between the intermittent drainages is assigned a low sensitivity by both records searches. They should be rated as low sensitivity in the SVP system, and given a Class 2 (low) sensitivity in the PFYC system.

Alternative 1, the Proposed Project, would not impact Quaternary lacustrine sediments or the small exposures of Older Alluvium. The Quaternary sediments of intermittent drainages would be impacted by access roads.

Alternative Access Route 1A

Under Alternative Access Route 1A, access to the Project site would be from Barstow Road and would follow Spinel Street heading west for approximately one mile. From that point, a new access route would be built heading south-west approximately 4.5 miles to the top of the ridge. This alternative would not impact Quaternary lacustrine sediments or the small exposures of Older Alluvium.

Alternative Access Route 1B

Under Alternative Access Route 1B, access to the Project site would still be from Barstow Road, east of the Project area. The first mile would be the same as that of Route 1A. This alternative would not impact Quaternary lacustrine sediments or the small exposures of Older Alluvium. The nearest that the access route would approach the Older Alluvium would be more than a mile to the southwest. The Quaternary sediments of intermittent drainages would be impacted by the access road. Mitigation measures MMPA1, MMPA2, and MMPA3 would be implemented to reduce impacts to potential paleontological resources caused by access routes. With proper implementation of mitigation measures, construction of Access Route 1B would not result in adverse impacts to paleontological resources.

Alternative Jasper Substation 1A – Public Land

Substation 1A is located southeast of the Project site on public-owned lands to include a 3.2-mile transmission line. Based on the records search results of the 7.5-minutes San

Bernardino and Fairview Valley Quadrangle Maps, there is low potential for paleontological resources to occur; however, mitigation measures MMPA1, MMPA2, and MMPA3 would be implemented to further reduce the potential for impacts to paleontological resources.

Alternative Jasper Substation 1B – Private Land

Substation 1B is located east of the Project site on privately-owned lands to include a transmission line of approximately 4.2 to 4.7 miles. Environmental impacts would be the same as those of Substation Alternative 1A, see the analysis above.

Alternative 2: Action on Amendment to CDCA Plan Determines Site Suitable for Wind Energy Development, ROW Application Denied, and CUP Not Approved

Under this alternative, BLM would amend the CDCA Plan to determine that the site is suitable for wind energy development, but would deny the ROW application for the Proposed Project, and the County would not approve the CUP for the Proposed Project. The site would remain in its present condition consisting of vacant desert lands, and impacts to paleontological resources would not occur.

Alternative 3: Action on Amendment to CDCA Plan Determines Site Unsuitable for Wind Energy Development

Under this alternative, the Project site would be determined unsuitable for wind energy development. No environmental consequences associated with construction and operation of the Proposed Project would occur. Thus, there would be no impact to any paleontological resources.

Alternative 4: No Action on Site Suitability and Proposed Project.

Under this alternative, no action would be taken to determine if the Project site is suitable for wind energy development, and there would be no amendment to the CDCA Plan. No environmental consequences associated with construction and operation of the Proposed Project would occur. Thus, there would be no impact to any paleontological resources.

3.16.5 Avoidance, Minimization, and/or Mitigation Measures

The Proposed Project would implement recommended BLM PEIS BMPs, which were adopted as part of the proposed Wind Energy Development Program to ensure minimal impact to natural and cultural resources. In addition to the BLM BMPs, Project-specific mitigation measures evaluated for their ability to eliminate or reduce the potential substantial adverse impacts related to paleontological resources were developed for the Proposed Project.

BLM BEST MANAGEMENT PRACTICES

- Operators shall determine whether paleontological resources exist in a project area on the basis of the sedimentary context of the area, a records search for past paleontological finds in the area, and/or, depending on the extent of existing information, a paleontological survey.
- If paleontological resources are present at the site, or if areas with a high potential to contain paleontological material have been identified, a paleontological resources management plan shall be developed. This plan shall include a mitigation plan for collection of the fossils; mitigation may include avoidance, removal of fossils, or

monitoring, if an area exhibits a high potential but no fossils were observed during survey, monitoring by a qualified paleontologist may be required during all excavation and earthmoving in the sensitive area. A report shall be prepared documenting these activities. The paleontological resources management plan also shall (1) establish a monitoring program, (2) identify measures to prevent potential looting/vandalism or erosion impacts, and (3) address the education of workers and the public to make them aware of the consequences of unauthorized collection of fossils on public land.

Construction BMPs

- Unexpected discovery of paleontological resources during construction shall be brought to the attention of the responsible BLM authorized officer immediately. Work shall be halted in the vicinity of the find to avoid further disturbance to the resources while that are being evaluated and appropriate mitigation measures are being developed.

PROJECT-SPECIFIC MITIGATION MEASURES

Construction Mitigation

MMPA1: A trained qualified paleontologist shall be present during ground-disturbing activities within the Proposed Project area in sediments determined likely to contain paleontological resources. BLM is required to issue a Paleontological Resources Use Permit and a Field Authorization prior to commencement of all field activities. The monitoring for paleontological resources shall be conducted on a half-time basis. If after a reasonable amount of excavation is done and it is determined by the qualified paleontologist that the sediments in question are not fossiliferous, or have low potential to contain fossils, the monitoring can be reduced. If paleontological resources are located within the Proposed Project, the monitoring program will increase to full-time. The monitor shall be empowered to temporarily halt or redirect construction activities to ensure avoidance of adverse impacts to paleontological resources. The monitor shall be equipped to rapidly remove any large fossil specimens encountered during excavation. During monitoring, if fossiliferous sediments are found, samples shall be collected and processed to recover microvertebrate fossils. Processing shall include wet screen washing and microscopic examination of the residual materials to identify small vertebrate remains.

MMPA2: All fossils collected during the Proposed Project shall be prepared to a reasonable point of identification by a qualified paleontologist. Excess sediment or matrix shall be removed from the specimens to reduce the bulk and cost of storage. Itemized catalogs of all material collected and identified shall be provided to the SBCM repository, along with the specimens for permanent curation and storage.

MMPA3: A report documenting the results of the monitoring and salvage activities and the significance of the fossils will be prepared and submitted to the SCBM for review and approval.

3.16.6 Summary of Project Environmental Impacts after Mitigation Measures Are Implemented

With implementation of the above-listed mitigation measures and BLM Wind Energy Program BMPs, no impacts to paleontological resources are anticipated as a result of the Proposed Project.

3.17 CUMULATIVE EFFECTS

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

Similarly, Sections 15126 and 15130 of the CEQA Guidelines require that EIRs consider the cumulative impacts of proposed projects. Cumulative impacts are defined as two or more individual effects which, when considered together, are considerable, or which compound or increase other environmental impacts (CEQA Guidelines Section 15355). The cumulative impact analysis may be based on:

- A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency; or
- A summary of projections contained in the adopted general plan or related planning document, or in a prior environmental document that has been adopted or certified, which described or evaluated regional or area-wide conditions contributing to the cumulative impact.

3.17.1 General Methodology

The cumulative effects analysis in this document tiers from and supplements the cumulative analysis in the PEIS (2005), as discussed in the beginning of this Chapter. It uses the list based approach consistent with both NEPA and CEQA. The analysis:

- Defines the geographic area in which the environmental effects of the Proposed Project and alternatives would occur (geographic areas may differ depending on the environmental resource considered);
- Lists and describes past, present, and reasonably foreseeable future actions that have or are expected to have impacts in the same geographic area as the Proposed Project and alternatives;
- Summarizes the effects that are expected in those geographic areas from the Proposed Project and alternatives (refer to other sections for complete analysis);
- Describes the combined direct and indirect environmental effects of the Proposed Project or alternative and the effects of and the past, present and reasonably foreseeable actions. These effects are described as being either temporary or long term.

As noted in CEQA Guidelines, Section 15130(b) (2), when utilizing a list approach, factors to consider when determining whether to include a related project include the nature of each environmental resource being examined and the location of the related project and its type.

3.17.2 Past, Present, and Reasonably Foreseeable Future Actions

The following sections identify past, present, and reasonably foreseeable future actions and local projects in or near the Granite Mountains area that may have cumulative environmental effects in combination with the Proposed Project or alternatives.

Past and Present Actions

As described in Section 3.9.3, Affected Environment, the Project site is located within the Granite Mountains and surrounded by lands that are largely undeveloped and sparsely populated.

In order to understand the contribution of past and present actions to the cumulative effects of the Proposed Project and alternatives, this analysis relies on current environmental conditions as a proxy for the impacts of past actions. This is because existing conditions reflect the aggregate impact of all prior human actions and natural events that have affected the environment and might contribute to cumulative effects.

This cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. There are several reasons for not taking this approach. First, a catalog and analysis of all past actions would be impractical to compile and unduly costly to obtain. Current conditions have been impacted by innumerable actions over the last century (and beyond), and trying to isolate the individual actions that continue to have residual impacts would be nearly impossible.

Second, providing the details of past actions on an individual basis would not be useful to predict the cumulative effects of the Proposed Project or alternatives. In fact, focusing on individual actions would be less accurate than looking at existing conditions, because there is limited information on the environmental impacts of individual past actions, and one cannot reasonably identify each and every action over the last century that has contributed to current conditions. Additionally, focusing on the impacts of past human actions and activities risks ignoring the important residual effects of past natural events, which may contribute to cumulative effects just as much as human actions. By looking at current conditions as a whole, the analysis captures all the residual effects of past human actions and natural events, regardless of which particular action or event contributed those effects.

Third, public scoping for this action did not identify public interest or need for detailed information on individual past actions. For these reasons, the analysis of past actions in this section is based on current environmental conditions, as described for each resource area in Chapter 3 of the DEIS/EIR, and the developed lists of actions are limited to reasonably foreseeable future actions described below.

Noteworthy present activities occurring in the area of the Proposed Project and alternatives include recreational activities that occur on Granite Mountain, including hunting and the use of an informal trail system for equestrian, bicycle, hiking, and off road vehicles; two 2-mile wide utility corridors with multiple large power lines, mining, and associated access roads in the Lucerne Valley; Off Highway Vehicle (OHV) Open Area Use and associated competitive and non-competitive events and activities within the Johnson Valley OHV Area (partially within the Lucerne Valley Community Plan area); recreational rocketry on Lucerne Valley Dry Lake; wind energy testing in Daggett, Sand Ridge, the Sidewinder Mountains, Horizon Camprock, Granite, West Fry, and Juniper Flats, as well as short-term non-invasive activities supporting these and other potential energy projects; airports in the surrounding area, including Edwards Air Force Base, Southern California Logistics Airport, and the Apple Valley Airport; water and gas pipelines located along SR-247; and Recreation and Public Purpose (R&PP) lease for a patented shooting range off Rabbit Springs Road near SR-18.

Reasonably Foreseeable Actions

For the purposes of this cumulative effects analysis, radii of five and ten miles were initially used to identify and list reasonably foreseeable actions and Project permit requests that could have environmental effects to be analyzed, along with the previously identified direct and indirect effects of the Proposed Project and alternative actions. This initial ten-mile radius area is expanded depending on the appropriate geographic area of potential effect (APE) to be considered for the cumulative effects analysis within each environmental resource area.

Projects within the Apple Valley sphere of influence or Lucerne Valley Community Plan area are included. Project information was obtained from published BLM and County application databases and discussions with agency staff on anticipated application submittals. Projects analyzed include:

- Multiple small- to large-scale residential and commercial/office development projects;
- Solar and wind energy projects;
- Mining operations;
- Linear utility and transmission line corridor projects;
- Two new communication lines from the interconnection substation (Jasper) to both the Apple Valley substation and the Cottonwood Substation;
- Withdrawal of up to 199,000 acres for expansion of Twentynine Palms (approximately half of which is within the Lucerne Valley Community Plan area);
- Projects and growth in other typical recreational uses of public lands, including a rodeo arena and portions of the Johnson Valley OHV area; and
- Typical public lands and OHV activities, including balloon testing, filming, and pedestrian rock climbing at Cougar Butte.

Specific projects are provided in Table 3.17-A below and depicted in **Figure 3.17-1**.

Table 3.17-A – Reasonably Foreseeable Local and Regional Projects Analyzed for Cumulative Impacts

PROJECTS IDENTIFIED				
MAP REFERENCE		PROJECT NAME/DESCRIPTION	LOCATION	DISTANCE FROM PROJECT (MILES)
BLM				
W2	CACA 46881	Sand Ridge Wind Energy Project	Sand Ridge	20 mi.
W3	CACA 49204	Stoddard-Daggett Wind Energy Project	South Barstow	20 mi.
S1	CACA 49561	Chevron Solar PV	Lucerne Valley	9-11 mi.
W1	CACA43088	Daggett Ridge Wind Energy Project	Barstow/Daggett, W ½ Section 13, T8N, R1W and in N ½ Section 9, T8N R1W, SBBM	16 mi.
S2	CACA 50704	LSR Pisgah, LLC	Lucerne Valley	3mi.

PROJECTS IDENTIFIED				
MAP REFERENCE		PROJECT NAME/DESCRIPTION	LOCATION	DISTANCE FROM PROJECT (MILES)
			T5N, R10E	
S4	CACA 50528	Rabbit Lake PV	Rabbit Dry Lake	5 mi.
	CACA-50328	Verizon Fiber-Optic Line	Apple Valley to Hinkley	0 mi.
County of San Bernardino – 1st District				
L1	P200700944/SP	Hacienda at Fairview Valley - Master-planned residential community with 3,114 residential units & supporting land uses (retail/commercial, parks, recreation, open space, public safety, and public facilities)	Fairview Valley	5 mi.
L2	P200601347/CF	General Plan Land Use District Amendment from RL to RS20M and tentative tract map to create 204 residential lots on 152.43 acres	Apple Valley	5 mi.
L3	P200700780/CF	General Plan Land Use District Amendment from LV/RL to LV/CN, CUP to establish a 12-lane bowling alley, 7,999 SF restaurant & retail shops with 8,088 SF & 3,070 SF on 3.84 acres	Lucerne Valley	5 mi.
L4	P200700825/CUP	CUP to establish a shopping center with three 4,336 SF retail buildings, two 4,228 SF retail buildings and one 9,040 SF retail building on 4.62 acres	Lucerne Valley	7 mi.
L5	P200600774/CF	General Plan Land Use District Amendment from RL to PD & Preliminary Development Plan and tentative tract to create 279 residential lots on 79.3 acres	Lucerne Valley	5 mi.
L6	P200600997/CF	General Plan Land Use District Amendment from RL-10 & RL-20 to RS-27M, tentative tract to create 235 residential lots on 300 acres & tentative tract to create 101 acres	Apple Valley	7 mi.
L7	P200600810/CUP	CUP to establish a mobile home park with 152 spaces and a 3-acre recreational area on 39.2	Apple Valley	5 mi.

PROJECTS IDENTIFIED				
MAP REFERENCE		PROJECT NAME/DESCRIPTION	LOCATION	DISTANCE FROM PROJECT (MILES)
		acres		
L8	P200601249/CF	General Plan Land Use District Amendment from RL to RS 20M & tentative tract to create 64 residential lots on 40 acres	Apple Valley	5mi.
LF	P2005014 SCH# 2005071084	Expansion of the Barstow Sanitary Landfill on 325 acres of land with four (4) cut and five (5) fill phases	Barstow	20 mi.
L9	12467CF1/ 2004/GPA/TT17252	General Plan Land Use District Amendment from RL to RS-20M & tentative tract to create 134 residential lots on 80 acres	Apple Valley	7 mi.
L10	P200500619CF1/ GPA/TT17557	General Plan Land Use District Amendment from RL-SCP to RS & tentative tract to create 205 residential lots on 120 acres	Apple Valley	8 mi.
California State Mining Projects				
M1	91-36-0052	OMYA- Sentinel Quarry	7299 Crystal Creek Rd. Lucerne Valley, CA 92356	11 mi.
M2	91-36-0054	Mitsubishi Cement Corp-Cushenbury Mine	5808 State Highway 18, Lucerne Valley, CA 92356	16 mi.
Southern California Edison Projects				
E1	SCE	Jasper Substation to Cottonwood Substation Fiber-optic line		0 mi.
E2	SCE	Jasper Substation to Apple Valley Substation Fiber-optic line	Apple Valley	0 mi.
E3	SCE	Pisgah-Lugo Line upgrade from Pisgah Substation to Cottonwood Substation	Hector area to Hesperia area	Less than 1 mi

3.17.3 Cumulative Effects Analysis

The sections below describe the potential cumulative environmental effects that could result from the Proposed Project or alternatives in combination with other past, present, or reasonably foreseeable future actions. It is unlikely that all of the listed projects would be developed in the near future, if at all. The economic recession has resulted in suspension of many housing and commercial development projects, and many developers may have abandoned their proposals. There is a state and private initiative to develop renewable energy projects, including the proposed solar and wind energy projects in this area. It is unlikely that simultaneous construction of the energy projects would occur, and they are expected to come online gradually over a period of several years. In order to provide a

conservative worst-case approach, this analysis assumes that all of the listed projects would be developed and become operational.

Types of Cumulative Environmental Effects by Project Type

All the listed activities affect similar elements of the environment in that they involve similar conversions of land use, construction activities, remove surface vegetation, reduce native species and habitat, generate air pollutants, cause sedimentation to surface-water bodies, introduce hazardous materials, and so forth. To provide a better understanding, for each type of project listed in the cumulative projects table, the environmental effects for that type of project are listed below. This discussion is followed by a cumulative effects analysis for each environmental resource area.

Wind Energy Projects

Three wind energy projects, Sand Ridge, Daggett Ridge, and Stoddard-Daggett, have a Plan of Development under review and are located approximately within 20 miles north of the Proposed Project. The Daggett Ridge Project has initiated the NEPA/CEQA process, and a DEIS/EIR is anticipated within the next three months. The environmental review process has not yet been initiated for the other two projects. Wind energy projects primarily involve construction effects:

- Temporary increase in air pollutants and dust emissions;
- Temporary increase in noise;
- Temporary or permanent disruption in wildlife patterns from construction activities;
- Possible loss of biological, cultural, or historic resources along access roads and foundations; and
- Temporary disruption of local traffic patterns and road use.

Most construction effects can be mitigated through site-specific BMPs and other mitigation measures. For this Project, permanent effects may also occur:

- Potential effects on migrating birds due to bird strikes;
- Potential effects on nesting birds due to electrocution along power transmission lines; and
- Effects to existing trails and recreational activities.

Solar Energy Projects

There are two solar photovoltaic (PV) projects in the area. The Chevron Solar PV Project would be located approximately 9 miles southeast of the Proposed Project. Rabbit Lake PV Project is located approximately 5 miles south of the Proposed Project. A DEIS was released in February 2010 for the Chevron Solar PV Project. An EIS has yet to be initiated for the Rabbit Lake PV project. Typically, construction of solar PV projects cause:

- Temporary increase in air pollutants and dust emissions;
- Temporary increase in noise;
- Temporary or permanent disruption in wildlife patterns from construction activities;

- Possible loss of biological, cultural, or historic resources; and
- Temporary disruption of local traffic patterns and road use.

Most construction effects can be mitigated through site-specific BMPs and other mitigation measures. However, because solar projects may preclude other land uses, several permanent effects could occur as a result of operations, including:

- Permanent loss of wildlife habitat;
- Effect to existing trails and recreational activities;
- Increase in impermeable surfaces that could lead to increased magnitude or frequency of flooding events; and
- Permanent alteration of visual or aesthetic characteristics in the area.

Residential and Commercial Development

Approximately 10 requests for general plan amendments, land divisions and conditional use permits would allow for residential, commercial, and office development in the Project area. These applications are under review in the San Bernardino County Planning Department. For the projects that involve amendments to the general plan, it is likely that environmental review would be required, since the EIR for the general plan would not have anticipated these revisions. These types of suburban developments have similar effects.

- In general, construction would result in localized and temporary increases in air emissions (NO_x and particulate matter), traffic, and noise.
- Since required permits would have been previously acquired, it can be assumed that the issuing agency would ensure that no threatened and endangered species or cultural resource would be adversely affected by the development or the effects would have to be mitigated. The land may or may not have been previously developed; therefore, it is not possible to determine for many of these sites if habitat would be lost.
- Commercial and residential developments represent permanent changes in land use, an increased area of impervious surfaces, and increased use of pesticides and fertilizers for landscaping. These factors can alter the local drainage patterns.

The potential cumulative effects of these types of developments depend upon their proximity to the site of the Proposed Project and the timing of their potential construction. At this time, the timing of these residential or commercial developments is uncertain.

Pipelines

Most pipelines are linear underground facilities that require trenching to bury the pipe. Typically, the disturbed area is larger during construction to allow for equipment, pipe laydown, and staging areas. Much of this land is reclaimed after construction ends. Aboveground infrastructure includes compressor stations and metering, power lines, and other operations facilities.

Effects include:

- Loss of native vegetation (habitat), disruption of wildlife;

- Loss of cultural or historic resources;
- Changes in visual quality;
- Increased predation;
- Avian mortality from power lines; and
- Threats to public health and safety.

Transmission and Telecommunication Lines

Environmental effects from construction and operation of transmission and telecommunication lines are similar to pipelines, except that the footprint from these facilities is smaller, usually only affecting land where the towers or other associated infrastructure is placed.

- Vegetation is affected along the entire ROW for access roads for maintenance and emergency repairs and to reduce the threat from wildfire or trees falling onto the lines.
- High-voltage transmission lines create a threat to birds, especially raptor species, which often build nests that sometimes cause electrical shorts that kill or seriously injure birds.

Cumulative Environmental Effects by Resource Area

For each environmental resource area, the analysis below first identifies the appropriate geographical area to be considered for the analysis. Within each environmental resource area, the environmental effects of the past, present, and reasonably foreseeable activities is then analyzed. Finally, the contribution of the project to the cumulative effect is evaluated in order to determine if the project would have a substantial contribution. For the purposes of CEQA, a summary cumulative impacts table is provided in Chapter 4.

Air Quality

For the cumulative analysis of air quality, the appropriate geographic area is the entire Mojave Desert Air Basin. The construction and operation of the reasonably foreseeable projects are likely to adversely affect air quality in the basin.

Some of the projects may be constructed with overlapping construction periods. Emissions from the construction phases of the projects would primarily be associated with exhaust (NO_x) and fugitive dust emissions (particulates) from mass site grading, construction activities and operation of construction equipment. Although the projects would be required to implement mitigation measures which include active watering and limiting speed of construction vehicles, temporary exceedances of State air quality standards for $PM_{2.5}$ and PM_{10} are expected. Although the Proposed Project and alternatives would contribute to this violation of air quality standards, the contribution of the project to the cumulative effect would not be considerable.

During the operations phase of the various projects, exceedances of state and federal air quality standards may be expected, primarily associated with increased automobile use in the area due to the residential and commercial development and power generation to support the new developments. Solar and wind energy facilities generate minimal emissions compared to conventional fossil fuel power generation facilities, and the

contribution of the renewable energy facilities would be minimal. Furthermore, the use of renewable energy generated within the study area would offset the demand otherwise met by conventional fossil fuel plants. The cumulative contribution of the Proposed Project to air quality during the operations phase would be positive for this reason. Although minor quantities of air contaminants would be generated, these would be more than offset by renewable energy and reduction in air quality effects of the otherwise required fossil fuel plants. It is noted that some reduced use of fossil fuel plants would still be required during periods when solar collectors are not functioning or the wind projects are not generating power.

Biological Resources

The appropriate geographic area for the biological resources area is the entire Project area and surrounding area, including the ACEC for the Bendire's thrasher. The primary cumulative impacts to the biological environment identified include vegetation habitat, wildlife, and wildlife movement within BLM's California Desert Conservation Area (CDCA) and HCA for the Bendire's thrasher. The Mojave Monkeyflower ACEC & the Carbonate Endemic Plants Conservation Area are approximately 13 miles northwest and 13 miles southeast of the Project area, respectively. Development of the reasonably foreseeable projects would involve both direct and indirect adverse impacts to wildlife primarily from loss of habitat, avoidance due to increased operational noise and lighting, and temporary disturbance from noise and light during construction. The solar projects would affect acreage along SR-247 and I-15. The residential and commercial projects would involve conversion of the desert environment along SR-18 and SR-247 between Apple Valley and Lucerne Valley. The Proposed Project's contribution to the cumulative effects is summarized as follows:

- Bendire's Thrasher: The northwestern portion of the Project and portions of the proposed north, west, and northeast access roads are located within Bendire's Thrasher HCA. However, the proposed turbine construction sites are not located within the Bendire's Thrasher habitat. The low number of current/historical observation indicates that Bendire's Thrasher is unlikely to occur.
- Desert Tortoise: While the Project has the potential to increase presence of off-road activity and adversely affect tortoise recruitment, the Project activities' contribution to tortoise mortality is not substantial. Restriction of speed and activity from off-road vehicles could reduce and limit tortoise mortalities. No substantial impediment would be experienced with regards to movement of the Desert Tortoise.
- Avian Species/Bats: Potential impacts include construction activity and noise effects on nesting activities and physical effects on habitats. Cumulatively, bird mortality could occur from nesting on high-voltage power lines and windmill strikes. While over 30 different bird species were observed within the Project area during surveys, including 11 federal, state, and BLM sensitive species, few Project-related mortalities are anticipated from contact with the turbines. Although this may be a cumulatively substantial effect, the projects contribution to the effect is not considered substantial.
- Desert Vegetation: Construction of the reasonably foreseeable projects would result in substantial vegetation crushing, clearing, or other ground disturbance that would occur both through temporary disturbance and permanent conversion of existing vegetation and habitat within the study area. Construction of the improvements associated with the Proposed Project or alternatives could result in permanent removal of between approximately 91 acres to 109 acres. Although the Project would

result in the loss or conversion of several vegetation communities, the Project's contribution to the cumulative disturbance is not considered substantial.

Cultural and Paleontological Resources

The appropriate geographic area for this issue is the entire study area. The conversion of hundreds of acres of previously undisturbed desert area into suburban residential and commercial areas, solar and wind projects, and utility and transmission line corridor projects is likely to cause adverse effects to unknown cultural and paleontological resources. Although project specific cultural resource evaluations would likely be required for each project and mitigation required where resources are identified during pedestrian surveys, it is likely that unknown resources may be encountered and lost during development of the projects. With respect to the contribution of the Proposed Project and alternatives, identified archaeological sites and isolates within the Project area are considered not to be eligible for listing on the National Register of Historic Places (NRHP). The possibility remains that resources within the Proposed Project area could exist where surface evidence was not visible at the time of survey. With the implementation of mitigation measures, the Proposed Projects contribution to the cumulative effects is not considered substantial.

Environmental Justice

The appropriate study area for environmental justice effects is the economic region. The proposed projects are not anticipated to result in adverse direct or indirect effects on low-income communities. With respect to the Proposed Project or alternatives, the construction of wind towers, transmission, and other facilities are not subject to the provisions of Executive Order 12898 because there are no disproportionately high or adverse human health and environmental effects. Furthermore, there are no external activities that would contribute to cumulative effects in the region as a result of the Project. Therefore, the reasonably foreseeable projects, including the Proposed Project or alternative actions, would not have a cumulative effect on environmental justice.

Geology, Seismicity, and Mineral Resources

For the purposes of this analysis, the entire region is the appropriate geographic area to examine. The entire area is seismically active, and all of the foreseeable projects would be subject to seismic activity. Pursuant to County and State Building Code requirements, all new development would be required to incorporate appropriate design and construction measures to guard against ground shaking hazards.

Geologic hazards are localized by nature, as they are related to the soils and geologic character of a particular site. The Proposed Project and all related projects and structures would be constructed in compliance with existing geotechnical investigations and safety regulations of the California Uniform Building Code and International Building Code. Typically, new construction is safer than older existing development. Since all the projects would be subject to these local, state, and federal laws, cumulative impacts related to geologic and soils safety are considered minor. There are no known mineral resources in the study area. Thus, no cumulative effects are anticipated.

Hazardous Materials & Public Health

The appropriate geographic area for this issue is the entire study area, including the regional circulation system. Construction of the proposed projects would involve the transportation, use, and disposal of hazardous materials on a daily basis. Even with proper handling

procedures, accidents are possible along highways or into drainages. Construction equipment and materials would expose people and workers to construction-related hazards on a daily basis. The Proposed Project's or alternatives' contribution to this issue is considered minor during the construction phase. There has been no identified hazard or hazardous materials on-site.

During operations of the new residential and commercial projects, increased releases of hazardous materials typical of suburban development may be expected compared to the existing desert environment. With respect to the contribution of the Proposed Project or alternatives, the wind turbines would use lubricating oils, greases, and petroleum products, none of which would contain compounds listed as hazardous by the EPA. All production, use, storage, transport, and disposal of hazardous materials would be in strict accordance with state and federal regulations. Therefore, the contribution of the Proposed Project is considered minor.

Hydrology & Water Quality

For the purposes of this environmental resource area, the appropriate geographic area is the entire watershed. All of the foreseeable projects would involve extensive ground disturbance during construction. The residential and commercial as well as some of the solar projects may substantially increase impermeable surfaces, run-off, and surface water hydrology in the Project area. Storm Water Pollution Prevention Plans (SWPPPs) would be required to mitigate impacts to water quality during construction.

New residential and suburban type projects would introduce new pollutants during the operations phase of the Project. In response, water quality degradation across the State of California, the State Water Resources Control Board and the Regional Water Quality Control Boards are now requiring low-impact design (LID) measures for all new projects. The goal is to reduce contaminant flows from new projects and ensure water quality at the project boundary rather than at downstream detention and treatment facilities.

With respect to the contribution of the Proposed Project or alternatives, wind energy projects generally result in little new impermeable surface area, primarily where the wind turbines are located. The vast majority of the Project area would remain in a permeable state and would be able to accommodate runoff. Where roads are constructed to connect the turbines, culverts would be installed in areas where water may move to wash out the roads. Additionally, the Project would implement BMPs to ensure water quality. Therefore, the contributions of the Proposed Project or alternatives to cumulative impacts to hydrology and water quality are considered minor.

Land Use & Planning

The geographic area for the evaluation of land use change effects is the entire study area. The conversion of hundreds of acres of desert environment into suburban residential and commercial land uses, solar and wind power facilities, and new or expanded utility and transmission corridors would have substantial land use effects. Some of the suburban projects may be consistent with the San Bernardino County General Plan and were evaluated in the EIR for that plan. However, many of the foreseeable residential projects include proposals for general plan amendments or revisions to federal land use plans. Such requests are discretionary and may or may not be granted. The effects of these land use changes cannot be fully understood at this time. Each individual project would be subject to CEQA and NEPA, and applicable and environmental effects would be determined at that

time. Many of the land use projects would be located along SR-18 and SR-247 between Apple Valley and Lucerne Valley. The character of this transportation corridor is expected to change as these projects are developed. The solar and wind energy projects would also result in changes in land use. It is expected that the resulting land use changes would cause substantial effects in numerous other environmental resource areas, both during construction and during operations, which are described in this section under individual resource area discussions.

With respect to the contribution of the Proposed Project or alternatives to the cumulative land use change and resulting environmental effects, direct effects on lands associated with the proposed project would be addressed through the required Conditional Use Permit (CUP) for wind turbine facilities. Approval of the CUP for operation of the wind turbines would allow a total disturbance footprint from the Project of approximately 6.4% of the total project area and is anticipated to confine to the disturbance footprint to within the Wind Monitoring ROW. There would be no external activities that would contribute to cumulative effects under the Proposed Project or alternative. One transmission line is in the process of being upgraded to accommodate new renewable energy facilities in the region, and the Proposed Project would use that line. However, this is an existing line, so no land use change would be involved with the upgrade. There would be no change in municipal or private land ownership or status associated with the Proposed Project or alternatives. The Proposed Project or alternatives are not expected to contribute substantially to the land use changes and effects in the study area.

Noise and Vibration

Noise and vibration effects are local as sound and vibration diminish exponentially with distance. The appropriate study approach for the cumulative analysis is to consider the proximity of each project to sensitive noise receptors and to determine if sensitive receptors would experience noise and vibration from multiple projects. Each of the reasonably foreseeable projects is expected to generate noise and vibration during the construction phase, including noise from blasting, construction traffic along roadways, and use of construction equipment. Compliance with federal and state regulations would ensure that noise levels would be 85 db or lower over an 8-hour period. This noise standard may still result in noticeable increases in sensitive receptors in the area due the quiet nature of the existing desert environment. Thus, cumulative noise and vibration impacts may occur depending on the timing and spatial relationship of the projects and sensitive receptors. With respect to the contribution of the Proposed Project or alternatives, site-specific and temporary increases in noise pollution would occur during construction of the wind turbines. The nearest permanent residences to the Project site are located approximately 1.5 miles from the nearest wind turbine. The contribution of the Proposed Project to cumulative noise and vibration effects during the construction phase would be minor.

During the operations phase of the Proposed Project, increased ambient noise is expected from the residential and commercial developments and associated traffic through the study area outside of the Project. Noise and vibration from the wind turbines may also affect nearby sensitive receptors, resulting in an overall increase in ambient noise in the study area. Since there are no other proposed projects in the immediate vicinity of the Proposed Project or alternative action, and no sensitive receptors in the proximate area, the Project's contribution to cumulative noise and vibration impacts is considered negligible.

Recreation

The appropriate study area for the cumulative effects analysis on recreation is the entire study area. Currently, casual non-motorized trails are used for recreation throughout the study area. The conversion of hundreds of acres of desert environment to residential and commercial uses, and solar and wind power projects, has disrupted this non-motorized recreational access resource.

Some of the larger residential projects may have requirements to provide open space and public trails. It is likely that the new residential development may increase the demand for trails in the desert environment. The suburbanization of the desert areas would also increase the demand for parks and other recreational facilities in the project area. It is unknown if the County would require the development of parks to serve the residents of the new communities. Public parks could be developed through the imposition of Quimby Fees on the residential projects, or the requirement that parks be provided within the projects themselves. As this is uncertain, the reasonable foreseeable projects are expected to have substantial effects on existing recreation.

With respect to the contribution of the Proposed Project or alternatives to the effects on recreational trail use, there is an existing network of non-motorized trails on the Project site. It is likely that very few if any of these trails would no longer be accessible in the area of the wind turbines. Thus, the Project would not substantially contribute to the cumulative loss of trails in the area. The Project itself is not expected to contribute to the local or regional demand for parks, trails, or other recreational facilities and would have no effect on off-site recreational facilities other than a minor increase in trail use elsewhere to compensate for any closed trails on the project site.

Socioeconomics

For the purposes of this issue area, the appropriate geographic area of analysis is the entire region. During the construction phases of the projects in the study area, employment opportunities are expected for residents in the region, particularly for the residential and commercial developments. The solar and wind energy projects would also provide employment opportunities, however on a smaller scale. The Proposed Project or alternatives would contribute to these employment opportunities during construction.

The operation of the projects in the study area, particularly the residential and commercial projects, would cause increased employment and tax revenues in the area. The Proposed Project or alternatives would not result in long-term impacts on population growth or demographics in the Project area and would not remove or disrupt any existing residences or neighborhoods. The Economic and Fiscal report prepared identifies the project would contribute substantial revenues to the Town of Apple Valley, the Lucerne Valley community, the cities of Victorville and Adelanto, and the County of San Bernardino during development, construction, and operation. No consistent link has been established over the long term between property values following wind project development. The relative impact of this Project on jobs and job creation is modest. In the region as a whole, effects of this Project will be minor. Therefore, the cumulative impacts of the Proposed Project or alternatives to socioeconomics are not considered substantial.

Transportation Systems & Facilities

The appropriate geographic area for the analysis of cumulative transportation systems and facilities is the entire planning area. During the construction phase of the listed projects,

minor increases in traffic are anticipated from construction workers and trucks. Due to the high level of service on existing roads in the area, no adverse effects are anticipated. During the operations phase of the projects, substantial increases in traffic are anticipated along the roads serving the residential and commercial projects (SR-18 and SR-247). With respect to the Proposed Project or alternatives, roads would be utilized only for routine maintenance of wind turbine structures. The traffic impact study determined that the proposed project would not generate or contribute a substantial amount of traffic to the existing roadway system neither during construction nor operational phases. The contribution of the Proposed Project or alternatives is considered negligible.

Utilities & Service Systems

The appropriate geographic study area for cumulative utilities and service systems analysis is the entire study area. The proposed residential and commercial projects may require the installation of new water and sewer facilities lines and potential upgrades of sewage treatment facilities. These suburban type development projects would also require natural gas service, stormwater drainage systems, cable television, and other services common to commercial or industrial development. As the residential and commercial projects would require project specific general plan changes, the demands of these projects on these systems and the ability of the existing service systems to accommodate the projects would be evaluated at that time. It is expected that if any utility or service system does not have the capacity to accommodate any project, the developer would be required to contribute to the upgrade of the system or the project would not be approved. The solar and wind energy projects, including the Proposed Project or alternatives, would not require these types of services. Electrical service and telephone/data lines are the only utilities that would be needed to serve the Proposed Project or alternatives and would be extended to the Project site from existing facilities in the area. The provision of the new wind energy to the transmission line and electrical would require alteration of the configuration of the existing transmission line. The existing Lugo-Pisgah 220-kV transmission line has the systems capacity for the Proposed Project, but it does not have sufficient capacity for future generation projects. Therefore, cumulative impacts are considered substantial.

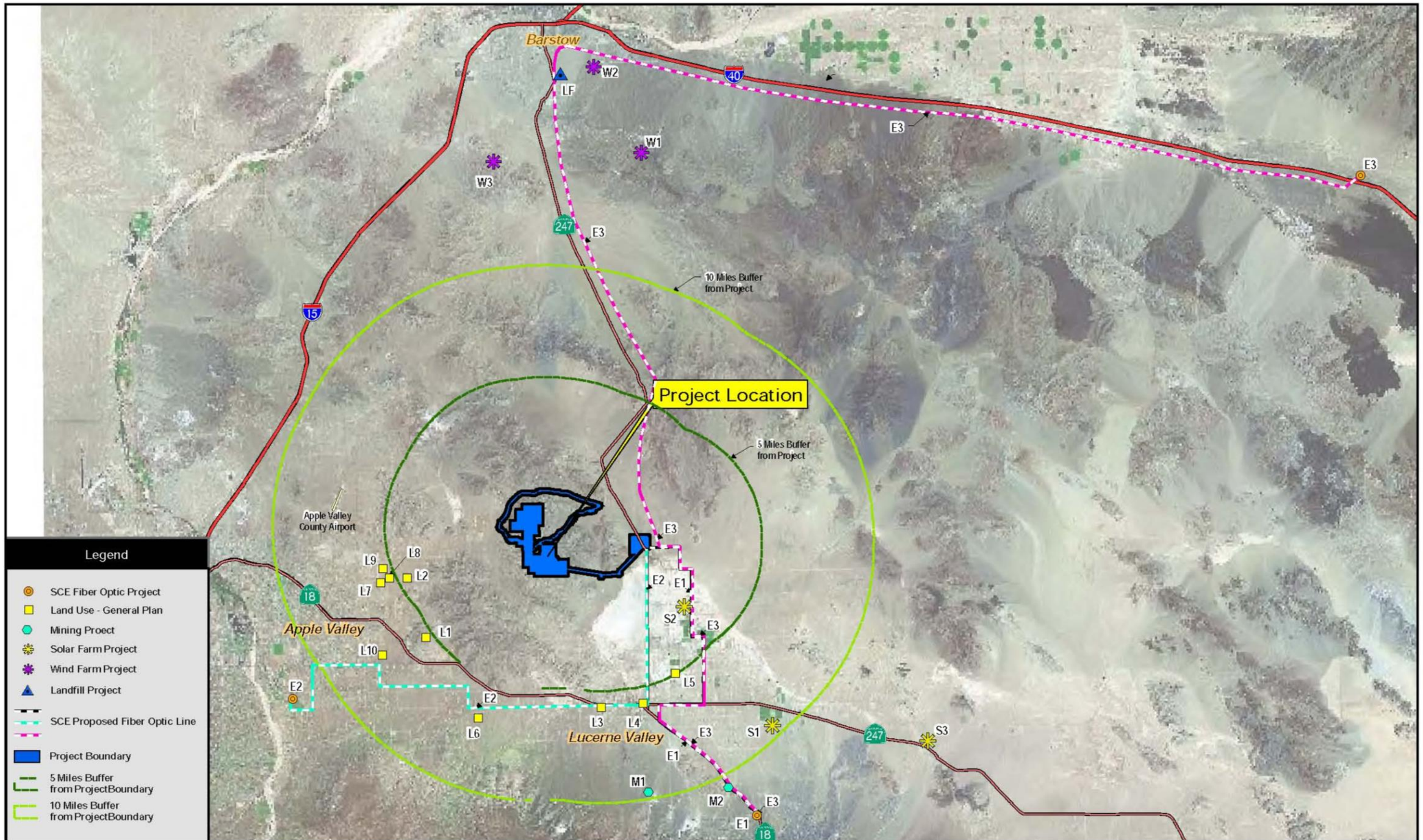
Visual Resources

The appropriate geographic area for the cumulative analysis of visual resources is the entire planning area, particularly along public roadways. Currently the visual character of the project area is predominantly a natural desert environment with sparse residential development. The County of San Bernardino has recently approved a number of individual wind generation facilities throughout the Barstow, Lucerne Valley and Apple Valley communities. The proposed residential tracts, commercial development projects, and solar and wind energy projects may substantially alter the visual character of the area. The extent of the perceived change in visual character depends on the proximity of the proposed projects to each other and the ability of the intervening mountains and valleys to screen the views of the various projects from travelers along the highway. It is anticipated that predominant desert environment vistas would continue after development of the proposed projects; however, these vistas would be interrupted occasionally by views of the various projects.

With respect to the Proposed Project and alternatives, the size and number of wind turbines associated with the Project, combined with other similar facilities in the region, may have adverse impacts to scenic resources. Views of the turbines would be experienced from those traveling along SR-247 and SR-18. Although the average daily traffic count for this

portion of SR-247 is currently relatively low, it would increase depending on the number of proposed residential tracts and commercial projects developed along these highways. The topography in the immediate area obstructs many views to the Project, creating only brief periods of visibility from the roadways. Therefore, the contribution of the Proposed Project or alternatives to cumulative effects to visual resources is considered substantial.

This page intentionally left blank.



Sources: Southern California Edison, Granite Mountain Wind Energy Project Plan of Development 2009

GRANITE MOUNTAIN WIND ENERGY PROJECT
POTENTIAL CUMULATIVE PROJECTS

Figure 3.17

This page intentionally left blank.

3.18 IRREVERSIBLE EFFECTS

NEPA requires an analysis of significant irreversible effects. Resources irreversibly or irretrievably committed to a proposed action are those utilized on a long-term or permanent basis. This includes the use of nonrenewable resources such as metal, wood, fuel, paper and other natural or cultural resources. These resources are considered non-retrievable in that they would be used for a proposed action when they could have been conserved or used for other purposes. Another effect that falls under the category of irreversible and irretrievable commitment of resources is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

The following section describes irreversible and irretrievable commitments that would occur in the Proposed Project Area and may be affected by construction, maintenance and operation, and decommissioning activities.

3.18.1 Air Quality

With the implementation of mitigation measures, construction and decommissioning activities would result in adverse impacts on air quality from particulate matter and vehicle emissions. These are further discussed Section 3.2.

Although the Proposed Project would not be developed within a forested area, desert soils have a carbon storage capacity that would be lost due to construction of the wind energy development project. Considering the relative proportion between the project area (2,756 acres) and the total regional extension of the CDCA (approximately 300,000 acres), potential effects of the project over the existing carbon storage capacity would be negligible; however, it would nonetheless be an adverse impact.

3.18.2 Visual Resources

Construction of the Proposed Project would cause unavoidable adverse impacts on visual resources by disrupting the viewshed in the Proposed Action area. Given the height and number of turbines proposed as Project improvements, and location of the Project (on top of a topographic high point), it would be highly visible from adjacent locations in the area and potentially adverse impacts on scenic attractiveness would be expected, as discussed in Section 3.3.

3.18.3 Biological Resources

Loss of approximately 90 acres of native vegetation and approximately between 168 to 170 acres of disturbed habitat in the Proposed Project Area would result in adverse impact; however, with the implementation of mitigation measures and BMPs, effects on native vegetation would be negligible and would not substantially alter or interfere with wildlife or plant populations. Because the effects would be negligible and would affect only a localized region, the loss of native vegetation would not cause an irreversible and irretrievable commitment of the resource.

3.18.4 Noise

Construction activities would cause increased noise levels, including vibration. This would be a localized and temporary effect and would cease at the end of construction. However, it is expected that low-level noise from transformers and vehicle use related to maintenance and operation activities would add a long-term unavoidable impact on composite noise

conditions. Under certain atmospheric conditions, local residential receptors would notice this noise; however, the noise levels are not expected to exceed levels established by local noise ordinances.

3.18.5 Cultural Resources

Construction of the Proposed Project could involve ground disturbance at various locations along the area of potential effect, potentially resulting in disturbance or destruction of subsurface cultural resources. The Proposed Project area, however, does not contain any sites recommended for inclusion on the National Register of Historical Places; therefore, no irreversible or irretrievable commitment of the cultural resources is expected.

3.18.6 Geology, Seismicity, and Soil Resources

There would be no unavoidable adverse impacts or irreversible and irretrievable commitments of geologic or topographic resources.

As discussed in Section 3.7, earthwork required to develop the Project site would include such activities as grubbing, grading, excavating, blasting, and backfilling. Mitigation measures and BMPs, such as implementation of a Dust Control Plan and a Re-Vegetation Plan, would reduce the severity and occurrence of these effects; however, there would be an irreversible and irretrievable commitment of soil resources on areas where revegetation fails and subsequent erosion occurs.

3.18.7 Hydrology And Water Quality

For the purposes of this analysis, an irreversible and irretrievable commitment of hydrology and water quality would be change in runoff patterns that would increase erosion, sediment flow, or the risk of flooding contamination of surface water bodies or a groundwater aquifer.

Mitigation measures and BMPs, such as the installation of drainage control features as well as other stormwater protection measures included as part of the Stormwater Pollution Prevention Plan (SWPPP), would eliminate or reduce the potential substantial adverse impacts related to water quality and hydrology.

The Proposed Project would not use surface water or groundwater and would instead use off-site and permitted municipal or industrial water sources for dust control. Therefore, the Proposed Action would not cause an irreversible or irretrievable commitment of water resources in the project area.

3.18.8 Land Use and Planning

Section 3.9 discusses the Proposed Project's potential effect on land use plans, policies, and regulations of the BLM and the County. The footprint of the Proposed Action would limit future use of 2,756 acres of land for other uses for the life of the project and would irreversibly and irretrievably commit the resource.

3.18.9 Recreation

The Proposed Project will not construct WTGs on designated recreation areas within the Project Area; however, it would restrict undesignated hiking, hunting, rock climbing, equestrian, and camping activities known to occur in the area. Potentially adverse impacts, which may diminish the enjoyment of these existing recreational activities, are not required

to be mitigated because they are undesignated. The effect would not result in irreversible or irretrievable commitments of recreational resources.

3.18.10 Socioeconomics

The Proposed Project would create up to 100 temporary construction jobs and 5 to 8 direct permanent jobs for the life of the Project. Occasional maintenance and repair activities could temporarily increase the number of on-site staff. This workforce would have a beneficial economic effect on the local economy. The Proposed Project would increase local revenues, which would be a beneficial effect. The analysis in Section 3.11 indicates that no irreversible and irretrievable commitments of the economic resources would occur. The analysis also indicates that social conditions would not be adversely affected by the Proposed Project.

3.18.11 Environmental Justice

As discussed in Section 3.12, the percentage of low-income and minority persons within the Project area does not exceed the County average. Therefore, the environmental impacts identified for the Proposed Project would not disproportionately affect low-income or minority populations; therefore, no unavoidable adverse impacts or irreversible and irretrievable commitments of resources are expected.

3.18.12 Transportation Systems and Facilities

Construction of the Proposed Project would cause localized, temporary, and unavoidable adverse impacts on roads and traffic. Vehicular use by construction workers would cause a minor increase in traffic on access routes, primarily affecting SR-18 and SR-247, which bear the burden of nearly all local trips as well as the visitor traffic that comes from outside the region. This increase would not affect the level-of-service for these roads.

During construction, oversized loads could cause short-term, temporary transportation disruptions and may require wider turning clearance requirements. Effects on the transportation network and effects on traffic would occur only during construction, and occasionally during maintenance activities. The Proposed Project would not cause a change in the level of service for the affected roads and would not cause a permanent irreversible and irretrievable commitment of the resource.

3.18.13 Utilities and Service Systems

The Proposed Project is located adjacent to the Southern California Edison (SCE) Lugo-Victor-Kramer-Control Corridor. Currently, there are no planned water or sewer lines within the Project site. Solid waste service is available through Burrtec Waste Industries, as contracted by the County for disposal site operations and maintenance Telecommunication lines are proposed in conjunction with the Jasper Interconnect Substation associated with the Proposed Project. Construction, operation and maintenance, and decommissioning would not have an unavoidable adverse impact on utilities and service systems, and no irretrievable and irreversible commitment of these services would occur.

3.18.14 Hazards and Hazardous Materials

Construction, operations and maintenance, and decommissioning of the Proposed Project could create public health and safety effects, especially on workers. In addition, the Proposed Project could introduce hazardous materials into the environment, mostly in the form of fuel, lubricants, and solvents used in construction and operation of the facilities.

Several mitigation measures have been identified to reduce potential effects below federal and state safety limits. Therefore, the Proposed Project would cause an irreversible and irretrievable commitment of the resource or unavoidable adverse public health and safety impacts.

3.18.15 Paleontological Resources

The geology of the Proposed Project site has low potential for paleontological resources. The literature search produced no mention of fossil occurrences in the immediate vicinity of the Proposed Project. The Proposed Project is not expected to cause an irreversible and irretrievable commitment of the resource.

3.19 SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY OF THE ENVIRONMENT

The short-term uses of the environment associated with the action alternative include those typically found with wind turbine development. Short-term effects associated with construction activities described in Chapter 2, include effects to the air quality, noise, and biological resources. These can be compared to the long-term benefits of the proposal, such as production of significant mineral resources for a growing regional population and economy.

NEPA requires consideration of the relationship between short-term uses of the environment and long-term productivity associated with the Proposed Project. This involves the consideration of whether the Proposed Project would sacrifice a resource value that might benefit the environment in the long-term for some short-term value to the Applicant or the public. For purposes of this discussion, short-term refers to three years or less after the construction phase and subsequent restoration and rehabilitation activities end. Long-term refers to three years or longer.

Short-term use of the environment during construction and restoration would result in the temporary loss of some resources, such as temporary loss of some habitat, increased noise, and air quality effects. Longer-term effects include the permanent loss of some visual quality from the introduction of WTGs and associated infrastructure in previously undisturbed areas and landscape scarring.

While there would be some irreversible and irretrievable commitments of some resources, as noted above, there would be no permanent loss of the overall productivity of the environment from the Proposed Project.

This page intentionally left blank.

This chapter identifies the environmentally superior alternative and describes those environmental effects identified in Chapter 3 that are considered significant under CEQA. Cumulative impacts are also described, and the potential for the Proposed Project to stimulate unplanned growth is considered. This combined environmental document complies with NEPA requirements for the preparation of an EIS, and with CEQA requirements for an EIR. Use of the term *significant* differs under NEPA and CEQA. CEQA requires that a determination of significant impact be stated in the DEIS/EIR. Under NEPA, the magnitude of the affected topic is evaluated and no judgment of its significance is stated in the DEIS/EIR. For the purposes of the impact discussion in this DEIS/EIR, determinations of CEQA significance are therefore considered separately in this chapter.

It should be noted that, although the presence of mitigation measures creates a presumption of significant impacts under CEQA, NEPA encourages mitigation measures for all of the impacts of a Proposed Action. For this reason, some mitigation measures described in this document are appropriate under NEPA, although the impacts they address may or may not be considered significant under CEQA.

4.1.1 Environmentally Superior Alternative

The State CEQA Guidelines, Section 15126.6(e)(2), require the identification of the environmentally superior alternative. Of the alternatives evaluated above, **Alternative 4 – No Action on Both Suitability and the Proposed Project** is recognized as the environmentally superior alternative with respect to minimal impacts compared to the Proposed Project. However, Alternative 4 does not meet the project Objectives. The State CEQA Guidelines also require the identification of another environmentally superior alternative if the “No Project” is the environmentally superior alternative.

With respect to **Alternative 2 – Action on Amendment to CDCA Plan determines Site Suitable for Wind Energy Development, ROW Application, and CUP Not Approved**, the project Objectives are not attained. However, it does allow for other wind development proposals to be considered. These wind development projects would have similar, if not the same, impacts as those of the Proposed Project.

Therefore, because some significant unavoidable impacts of the Project are avoided or reduced to less than significant at the expense of other potential impacts becoming/remaining significant and unavoidable without the Project, and none of the Project Objectives are met, Alternative 2 is not an environmentally superior alternative.

4.1.2 Thresholds of Significance

CEQA requires that an EIR identify specific thresholds for significance and the significant effects of the Proposed Project (CEQA Guidelines Section 15126). The County utilizes threshold criteria based on the methods outlined by the CEQA Guidelines. The fundamental definition of significant impact under CEQA is “a substantial adverse change in physical conditions.” These criteria underlie the evaluation of environmental impacts for most of the impact issues identified in the CEQA Environmental Checklist Form (CEQA Guidelines Appendix G). Table 4.1 presents the resource areas, thresholds of significance under CEQA, and predicted impact levels of each from Alternative 1, the Proposed Action.

Table 4.1: CEQA Thresholds of Significance

RESOURCE AREA	DEIS/EIR SECTION	CEQA THRESHOLD OF SIGNIFICANCE	IMPACT LEVEL FROM PROPOSED ACTION
Air Quality	3.2	A significant impact would occur if the project would: (a)conflict with or obstruct implementation of the applicable air quality plan; (b) violate any air quality standard or contribute substantially to an existing or projected air quality violation; (c) result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable ambient air quality standard; (d) expose sensitive receptors to substantial pollutant concentrations; or (e) create objectionable odors affecting a substantial number of people.	Significant
Agriculture Resources	N/A	The project would have a significant effect on the environment if it would: (a) convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to nonagricultural use; (b) conflict with existing zoning for agricultural use, or a Williamson Act contract; (c) involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non agricultural use.	N/A
Aesthetics	3.3	A significant impact would occur if the project would: (a) have a substantial adverse effect on a scenic vista; (b) substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway; (c) substantially degrade the existing visual character or quality of the site and its surroundings; or (d) create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.	Significant
Biological Resources	3.4	A significant impact would occur if the project would: (a) have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies or regulations or by the CDFG or the USFWS; b) have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies or regulations or by CDFG or USFWS; (c) have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA; (d) interfere substantially with the movement of native resident or migratory fish or wildlife species, wildlife corridors, or wildlife nursery sites; (e) conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; (f) conflict with the provisions of an approved local, regional, or state habitat conservation plan.	Less than significant with mitigation
Cultural Resources	3.6	A significant impact would occur if the project would: (a) & (b) cause a substantial adverse change in the significance of a historical or archaeological resource as defined in Public Resources Code Section 15064.5; (c) directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or (d) disturb any human remains, including those interred outside of formal cemeteries.	Less than significant with mitigation
Geology and Soils	3.7	A significant impact would occur if the project would: (a) expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving (i) rupture of a known earthquake fault; (ii) strong seismic ground shaking; (iii) seismic-related ground failure, including liquefaction; (iv) landslides; (b) result in substantial soil erosion or loss of topsoil; (c) be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse; (d) be located on expansive soil as defined in Table 18-1-B of the Uniform Building Code (1994),creating substantial risks to life or property; or (e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.	Less than significant with mitigation

RESOURCE AREA	DEIS/EIR SECTION	CEQA THRESHOLD OF SIGNIFICANCE	IMPACT LEVEL FROM PROPOSED ACTION
Hazards and Hazardous Materials	3.15	A significant impact would occur if the project would: (a) create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials; (b) create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; (c) emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one quarter mile of an existing or proposed school; (d) 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, created significant hazard to the public or the environment; (e) for a project located within an airport land use plan or within two miles of a public or private use airport, would the project result in a safety hazard for people residing or working in the project area; (f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area; (g) impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or (h) expose people or structures to a significant risk of loss, injury or death involving wildfires.	Less than significant with mitigation
Hydrology and Water Quality	3.8	A significant impact would occur if the project would: (a) violate any water quality standards or waste discharge requirements; (b) substantially deplete groundwater supplies or interfere substantially with groundwater recharge; (c) substantially alter the existing drainage pattern of the site or area in a manner which would result in substantial erosion or siltation on- or off-site; (d) substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site; (e) create or contribute run-off water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; (f) otherwise substantially degrade water quality; (g) place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map; (h) place within a 100-year flood hazard area structures which would impede or redirect flood flows; (i) expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or (j) inundation by seiche, tsunami, or mudflow.	Less than significant with mitigation
Land Use and Planning	3.9	A significant impact would occur if the project would: (a) physically divide an established community; (b) conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project; or (c) conflict with any applicable habitat conservation plan or natural community conservation plan.	Less than significant
Mineral Resources	N/A	A significant impact would occur if the project would: (a) result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or (b) result in the loss or availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.	N/A
Noise	3.5	A significant impact would occur if the project would: (a) exposure of persons to or generation of noise levels in excess of standards established in local general plans or noise ordinances; (b) exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels (vibration of 75 VdB is generally considered intrusive for residential state uses); (c) a substantial permanent increase in ambient noise in the project vicinity; (d) a substantial temporary or periodic increase in ambient noise levels in the project vicinity; (e) for a project located within an airport land use plan or, where such a plan has	Less than significant with mitigation

RESOURCE AREA	DEIS/EIR SECTION	CEQA THRESHOLD OF SIGNIFICANCE	IMPACT LEVEL FROM PROPOSED ACTION
		not been adopted, within two miles of a public airport, would the project expose people residing or working in the project area to excessive noise levels; or (f) for a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.	
Population and Housing	3.11	A significant impact would occur if the project would: (a) induce substantial population growth in an area, either directly or indirectly; (b) displace substantial numbers of existing housing units or people, necessitating the construction of replacement housing elsewhere; or (c) displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.	Less than significant.
Public Services	N/A	A significant impact would occur if the project would: result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: fire protection, police protection, schools, parks, or other public facilities.	Less than significant with mitigation
Recreation	3.10	A significant impact would occur if the project would: (a) increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; (b) include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.	Less than significant
Transportation and Traffic	3.13	A significant impact would occur if the project would: (a) cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system; (b) exceed, either individually or cumulatively, a level of service standard established by the local county congestion management agency; (c) result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risk; (d) substantially increase hazards due to a design feature; (e) result in inadequate emergency access; (f) result in inadequate parking capacity; or (g) conflict with adopted policies, plans, or programs supporting alternative transportation.	Less than significant with mitigation.
Utilities and Services Systems	3.14	A significant impact would occur if the project would: (a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board; (b) require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; (c) require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; (d) have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed; (e) result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments; (f) be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs; (g) comply with federal, state, and local statutes and regulations related to solid waste.	Less than significant with mitigation

4.1.3 Effects Found To Be Not Significant

CEQA Guidelines Section 15128 requires a brief discussion of various possible significant effects of a Proposed Project that were determined not to be significant and were therefore not discussed in detail in this DEIS/EIR. As stated in Chapter 1 of this DEIS/EIR, an NOP was prepared for the Proposed Project by the County Management and sent out for public review (see Appendix C). Based on comments received during the public scoping for preparation of the DEIS/EIR, the County and BLM identified the following areas for full impact analysis: air quality, noise, biological resources, geology and soils, cultural resources, visual resources, hydrology, land use, recreation, transportation, utilities, paleontological resources, and public health and safety.

Results of the DEIS/EIR analysis are presented in Sections 3.1 through 3.18 and conclude that the Proposed Project incorporates sufficient environmental commitments to ensure that impacts related to air quality, noise, biological resources, geology and soils, cultural resources, hydrology, land use, recreation, transportation, paleontological resources, and public health and safety would be less than significant.

4.1.4 Significant Effects That Cannot Be Avoided

Section 15126.2(b) of the CEQA Guidelines requires identification of significant environmental effects that cannot be avoided if the Proposed Project is implemented. As discussed in this DEIS/EIR, implementation of the Proposed Project would not result in any significant impacts that cannot be avoided or mitigated with the exception of air quality, visual resources, and utilities which would have a significant impact.

4.1.5 Cumulative Effects

Sections 15126 and 15130 of the CEQA Guidelines require that EIRs disclose the cumulative impacts of proposed projects. Cumulative impacts are defined as two or more individual effects which, when considered together, are considerable, or which compound or increase other environmental impacts (CEQA Guidelines Section 15355). For the purposes of determining significance, the Project's cumulative impact would be significant if the Project's contribution to the cumulative effect is considerable. The Proposed Project followed a list-based approach, as was the case in the NEPA Cumulative Effects discussion in Section 3.17 of this document. Past, present, and reasonably foreseeable future actions were obtained from published BLM and County application databases and discussions with agency staffs on anticipated application submittals, as well as using the scoping comments and public meetings of the Project. The cumulative impacts analysis is provided in Section 3.17. For the purposes of CEQA, the significance levels are summarized in Table 4.2 below.

Table 4.2: Cumulative Impacts

Environmental Issue Area	Effect of Projects in the Area	Contribution of Proposed Project	Significance Level of Proposed Project
Air Quality	Substantial construction impacts	Not considerable	Less than significant
Biological Resources	Substantial	Not considerable	Less than significant
Cultural and Paleontological Resources	Substantial	Not considerable	Less than significant
Geology, Seismicity, and Mineral Resources	Not substantial	Not considerable	Less than significant
Hazardous Materials & Public Health	Not substantial	Not considerable	Less than significant

Environmental Issue Area	Effect of Projects in the Area	Contribution of Proposed Project	Significance Level of Proposed Project
Hydrology & Water Quality	Not substantial	Not considerable	Less than significant
Land Use & Planning	Substantial	Not considerable	Less than significant
Noise and Vibration	Substantial construction impacts	Not considerable	Less than significant
Recreation	Substantial	Not considerable	Less than significant
Utilities & Service Systems	Substantial	Not considerable	Significant
Visual Resources	Substantial	Considerable	Significant

4.1.6 Growth-Inducing Effects

CEQA requires a consideration of a project's capacity to induce growth. CEQA Section 15126.2(d), Growth Inducing Impacts of the Proposed Project, discusses the ways in which the Proposed Project could foster economic or population growth, or induce additional housing, either directly or indirectly in the surrounding environment.

Growth inducement would occur if the amount of population or employment growth projected to occur as a result of the Project would exceed planned levels. Increased development and growth in an area depend on a variety of factors, including employment and other opportunities, availability of developable land, and availability of infrastructure, water, and power resources.

The Proposed Project is not likely to generate long-term population growth in the community or change area demographics. The Proposed Project involves the construction and operation of a wind energy facility that is consistent with existing land use designations. The Proposed Project does not involve the development of additional housing or major employment opportunities that could result in direct population growth.

The Proposed Project is anticipated to have a lifetime of up to 30 years, after which the WTG facility would be decommissioned. Based on the analysis in Section 3.12 Socioeconomics of this DEIS/EIR, the Proposed Project can be projected to generate 5 to 8 permanent jobs and 7 to 12 indirect permanent jobs. The creation of 5 to 12 new employees (i.e., jobs) comprises only 0.02 to 0.04 percent of the forecast employment for Apple Valley in 2030. For the unincorporated areas of San Bernardino County, the Proposed Project would constitute a negligible percentage of the forecasted employment in 2030. This negligible increase of growth would not have a secondary effect of expanding the size of local markets and inducing additional economic activity in the area.

Table 4.2: SCAG Population Forecasts

2030 Forecasts	Population	Households	Employees
Apply Valley	95,675	36,958	29,670
SBAG- Unincorporated Area	436,515	152,477	106,997
SBAG	2,713,149	897,739	1,178,890
SCAG Region	22,890,797	7,660,107	10,527,202

Source: SCAG

This chapter describes the consultation and coordination activities the BLM has carried out while preparing this DEIS/EIR. The DEIS/EIR represents the efforts and involvement of a broad range of participants, including other federal agencies, Native American tribal groups, private organizations, and state and local governments. Consultation and coordination has occurred in a variety of ways throughout the NEPA/CEQA process. Both formal and informal efforts have been made to involve the public. Public comments on the draft and responses to those comments will be included in the Final EIS/EIR.

5.1 COORDINATION

The Proposed Project is subject to the environmental review requirements of both CEQA and NEPA. The BLM is required by law to prepare NEPA analysis and documentation "in cooperation with state and local governments" and other agencies with jurisdiction by law or special expertise (42 U.S.C. 4331[a], 4332[2]). Qualified agencies, tribes, or other governments that enter into formal cooperation under this provision are called cooperating agencies. In support of the cooperating agency mandate, BLM invited the following federal, state, tribal, and local agencies to become cooperating agencies on the development of the DEIS/EIR. In addition, representatives from other interested federal and state agencies and tribes provided BLM with ongoing verbal and/or written comments and planning information. Table 5.1 lists organizations and agencies that were formally or informally consulted in this NEPA process.

Table 5.1: Organizations, Tribes, and Agencies Consulted

ORGANIZATION
Federal
Bureau of Land Management Barstow Field Office
Department of Homeland Security
Environmental Protection Agency
Federal Aviation Administration
U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service
State
California Department of Fish and Game
State Historic Preservation Office
State Water Resources Control Board
Lahontan Regional Water Quality Control Board
Colorado River Regional Water Quality Control Board
Local
San Bernardino County Land Use Services Department
San Bernardino County Flood Control District
San Bernardino County Department of Transportation
Tribes
San Manuel Band of Mission Indians

5.2 PUBLIC INVOLVEMENT AND SCOPING

Public participation in this DEIS/EIR is a dynamic process that continues throughout the NEPA/CEQA process. In addition to formal public participation, informal contact occurred with public land users and interested parties during the scoping period that occurred from December 6, 2007, to March 5, 2008, and throughout the NEPA process. BLM and the County held briefings on this Proposed Project to the Lucerne Valley Economic Development Association, and public scoping comments were received from three state

agencies, California Regional Water Quality Control Board for the Lahontan region, Department of Fish and Game, and the Department of Transportation; three local government organizations, Mojave Desert Air Quality Management District, the Southern California Association of Governments, and the San Bernardino County Building and Safety Department; and nearly nine other organizations, including environmental and interest groups.

The NEPA EIS scoping period was initiated with the publication of an NOI in the *Federal Register* on December 6, 2007. The CEQA EIR scoping period was initiated with the filing/posting of the NOP on February 29, 2008. The public scoping period for the Proposed Project was scheduled to end on March 31, 2008; however, upon request of the County, the scoping period was extended to May 5, 2008, to provide the opportunity for additional public comment.

Two public scoping meetings and were held in Apple Valley (see Table 5.2): one on March 18, 2008, at the Mojave Mesa Elementary School and the other on April 29, 2008, at Granite Hills High School. The applicant attended the Lucerne Valley Economic Development Association (LVEDA) bi-monthly meeting on April 1, 2008, to brief them on the Proposed Project and to answer questions and address concerns at the Lucerne Valley Community Center. At each of these weekday evening meetings, the applicant gave a Project presentation, and the BLM and the County also gave briefings, after which the BLM, the County, and the applicant answered questions.

Table 5.2: Scoping Meetings

MEETING & LOCATION	DATE	NUMBER OF SIGNED-IN PARTICIPANTS
Scoping Meeting Mojave Mesa Elementary School, Apple Valley, California	Tuesday, March 18, 2008	59
Formal Presentation and Q/A LVEDA, Lucerne Valley Community Center, Lucerne Valley, California	Tuesday, April 1, 2008	45 (estimated)
Scoping Meeting Granite Hills High School, Apple Valley, California	Tuesday, April 29, 2008	137

A total of 52 written communications regarding the Proposed Project were received during the scoping period. Public comments and concerns are summarized in Table 5.3. The comments are on file in the BLM Barstow Field Office and are included as part of the Administrative Record. As shown in Table 5.3, the predominant issues identified during public scoping included aesthetics, air quality, biological resources, economics, geology/soils, hazards and hazardous materials, hydrology/water quality, land use planning, noise, population/housing, recreation, transportation/traffic, and utilities/service systems.

Table 5.3: Summary of Key Issues

CATEGORY	ISSUES
Visual Resources	▪ How will the Proposed Project impact the mountain views and how visible will the turbines be? ▪ Concerns over the visual impacts of the wind turbines and transmission lines.
Agriculture Resources	No Issues Identified

CATEGORY	ISSUES
Air Quality	▪ Will dust be created during construction of the Proposed Project? ▪ Concerns over potential wind blown dust and particles dispersed during the construction and operation of the Proposed Project.
Biological Resources	▪ How will the Proposed Project impact migratory birds and other avian species? ▪ Concerns over the potential effect of the turbines on migrating avian species. Concern about the potential impact to wildlife corridors. ▪ Concern about potential impacts to desert tortoise. ▪ Potential impacts to plants, wildlife, and associated habitats.
Cultural Resources	No Issues Identified
Economics	▪ How will the Proposed Project potentially affect property values in the site vicinity?
Geology/Soils	▪ Concern about soil erosion potentially resulting from the Proposed Project.
Hazards & Hazardous Materials	▪ Will dynamite be used to blast for the construction of the turbine footings?
Hydrology/Water Quality	▪ How will stormwater be managed on-site to prevent pollutants from non-point sources from entering and degrading surface or ground waters? ▪ How will the Proposed Project construction (blasting) affect the local water table and wells in the area?
Land Use/Planning	▪ How will the Proposed Project potentially affect property values in the Project vicinity? ▪ Will the Proposed Project cause military radar interference?
Mineral Resources	No Issues Identified
Noise	▪ Will the turbines be loud? ▪ How much noise do the turbines produce while generating energy?
Population/Housing	▪ How will the Proposed Project potentially affect property values in Apple Valley and Lucerne Valley? ▪ Will construction and operation of the Proposed Project potentially affect population/ construction growth in the Project area?
Public Services	No Issues Identified
Recreation	▪ How will the Proposed Project affect potential of off-road recreational activities on the Granite Mountain Range? ▪ How will the Proposed Project affect hunting and other recreational activities?
Transportation/Traffic	▪ Will traffic increase during the construction of the Proposed Project? How much? ▪ Will traffic increase after construction? How much?
Utilities/Service Systems	▪ Will SCE require the construction of any upgrades associated with the Proposed Project? Where will the new 220 kV substation be built and will existing transmission lines be upgraded to accommodate the electrical output of the Proposed Project?

Public involvement in planning for the Final EIS/EIR is ongoing. There will continue to be many opportunities for public involvement.

5.3 TRIBAL CONSULTATION

To comply with Executive Orders regarding Government-to-Government relations with Native Americans and other federal laws and regulations, formal and informal contacts were made to one tribal entity during the planning process. BLM initiated consultation with the San Manuel Band of Mission Indians through a letter, which was sent at the beginning of the NEPA process in November 2007. A letter was sent to the chairperson of each band or tribe that could have cultural ties to the Project area, and a letter was sent to committee members, staff, or individuals who might have an interest in the Project area. Each letter

briefly explained the Proposed Project and requested comments on religious or cultural values that had the potential to be affected. No issues were identified at that time. Since then, BLM has followed up by sending cultural information to the tribes upon completion of the cultural surveys and re-inviting the tribes to comment at the NEPA process. Upon request of one of the tribes, the San Manuel Band of Mission Indians, BLM conducted a follow-up consultation meeting in December 2009 to discuss the details of the Proposed Project and cultural survey results. To date, no issues have been raised. These entities will continue to be contacted and comments requested at key milestone points.

5.4 LIST OF PREPARERS

This DEIS/EIR was prepared by an interdisciplinary team of specialists from the BLM Barstow Field Office, San Bernardino County, and URS Corporation. Table 5.4 shows the list of preparers and individuals involved in the preparation of this DEIS/EIR.

Table 5.5: List of Preparers

NAME	DRAFT EIS RESPONSIBILITIES	EDUCATION/EXPERIENCE
Bureau of Land Management Barstow Field Office		
Edyth Seehafer	Planning & Environmental Coordinator	N/A
Joan Patrovsky	Project Manager	N/A
County of San Bernardino		
Carrie Hyke	Project Manager	N/A
Doug Feremenga	Planner	N/A
URS Corporation		
Brian Wynne	Project Principal	A.A., Oceanographic Studies, Fullerton College.
Jeff Rice	Project Manager, Planning Team Lead	M.B.A., California State University, Long Beach; B.S., Urban and Regional Planning, California State University Polytechnic University, Pomona.
Leonard Malo	Wildlife Habitat, Special Status Species	M.S., Environmental Management, University of San Francisco.
Jay Abbott	Socioeconomics Lead	M.S., Resource Economics, UC Davis
Noel Casil	Traffic	B.S., Civil Engineering, University of Santo Tomas, Manila, Philippines. Registered Civil Engineer in California.
Kim Castruita	Socioeconomics, Environmental Planner	B.S., Urban Planning, California State Polytechnic University, Pomona.
Pei-Ming Chou	Impact Analysis, Environmental Planner	B.A., English Literature, UCLA; M.A. in Historic Preservation Planning, Cornell University.
Joe Devoy	Geographic Information System (GIS) Lead	B.S., Mechanical Engineering, California State University, Long Beach. Registered Civil Engineer in California.
Cynthia Gabaldon	Water Quality and Permitting Lead	B.S., Civil Engineering, California State Polytechnic University, Pomona. Registered Civil Engineer in California.
Brent Leftwich	Cultural Resources Lead	M.A. and PhD (pending), Anthropology, University of California Santa Barbara.
Lincoln Hulse	Biological Resources	B.S., Environmental Science w/ emphasis in Wildlife Biology, Northern Arizona University.
Dustin Kay	Cultural Resources	B.S., Anthropology, Oregon State.
Ron Reeves	Noise	B.S., Information Systems, Western Carolina University.

Corinne Lytle	Visual Resources	B.A., Environmental Studies, University of California, Santa Barbara.
Angela Leiba	Visual Resource	M.S. Program, Computer Graphics, University of California, Los Angeles.
Bill O'Braitis	Geological Resources	B.S., Geology, Stephen F. Austin State University.
Joe Stewart	Paleontological Resources	Ph.D, Systematics and Ecology, University of Kansas.
Christina Stora	Impact Analysis, Environmental Planner	B.S., Environmental Science, Humboldt State University.
EJ Koford	Impact Analysis, Natural Resources	M.S., Ecology, University of California Davis.
Tammy Chavez	Air Quality	B.S., Environmental Studies, University of California Riverside.
Virginia Viado	Sr. Urban Planner	B.S., Urban and Regional Planning, California State Polytechnic University, Pomona.
Lucy Lin	Comments and Review, Environmental Planner	M.Pl., Planning, University of Southern California

5.5 LIST OF RECIPIENTS OF THE DEIS/EIR

The following is a list of recipients of the DEIS/EIR in alphabetical order sorted by category. In addition, all individuals and organization that provided scoping comments or otherwise requested will receive a copy.

Federal Agencies

Bureau of Land Management

- Washington, D.C. Office
- California State Office
- California Desert District Office
- Barstow Field Office

Department of Interior

- Denver Library
- Office of Environmental Policy and Compliance, Washington, D.C.

U.S. Environmental Protection Agency

- Washington, D.C.
- San Francisco, California

U.S. Fish and Wildlife Service

- Region 8, formerly the California and Nevada Operations Office (CNO)

U.S. Forest Service

- Pacific Southwest Region

State and Local Agencies

- California Department of Fish and Game (CDFG)

- California Department of Transportation (Caltrans)
- Department of Toxic Substances Control (DTSC)
- Office of Planning & Research (OPR)
- San Bernardino County (LUSD)
- Southern California Association of Governments (SCAG)
- California Public Utilities Commission (CPUC)
- Town of Apple Valley

Tribes

- Native American Heritage Commission (NAHC)
- San Manuel Band of Mission Indians

Organizations

- Center for Biological Diversity
- San Bernardino Valley Audubon Society
- Sierra Club – San Gorgonio Chapter
- California Independent Systems Operators (CAL ISO)
- Southern California Edison (SCE)
- Lucerne Valley Municipal Advisory Council
- Lucerne Valley Economic Development Association

Libraries

- Apple Valley Newton T. Brass Branch Library

APPENDIX A: BIBLIOGRAPHY

Appendix A: Bibliography

Apple Valley Chamber of Commerce. "Apple Valley History" <http://www.villageprofile.com/california/applevalley/main.html>.

Association of Environmental Professionals, 2009. California Environmental Quality Act Statutes and Guidelines.

Basgall, Mark E. Further Archaeological Assessments in Deadman Lake Basin, Marine Corps Air Ground Combat Center, Twentynine Palms, California. Twentynine Palms, California: United States Marine Corps, Marine Corps Air Ground Combat Center, 2004

Basgall, Mark E. and M.C. Hall. "Fort Irwin Archaeology: Emerging Perspectives on Mojave Desert Prehistory." Society for California Archaeology Newsletter 26.5 (1994):1-7.

Bean, John Lowell and Charles R. Smith. "Serrano." Handbook of North American Indians, Vol 8: California R. F. Heizer, ed. Washington, D.C.: Smithsonian Institution,1978. 570-574.

Benedict, R. "A Brief Sketch of Serrano Culture." American Anthropologist 26.3 (1924).

Bolt, Beranek, and Newman, Inc. 1973. Fundamentals and Abatement of Highway Traffic Noise. U.S. Department of Transportation Contract Number DOT-FH-11-7976, Office of Environmental Policy, Federal Highway Administration.

Bortugno, E. J., and T. F. Spittler. 1986. Geologic map of the San Bernardino Quadrangle. California Division of Mines and Geology Regional Geologic Maps Series, Map 3A.

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*). Prepared by Hubbs-Sea World Research Institute for U.S. Air Force Research Laboratory. May.

Bowles, A.E. 2008. Personal Communication between Dr. Ann Bowles, Hubbs-Sea World Research Institute Senior Research Biologist and Sheyna Wisdom, Senior Noise Analyst/Biologist at URS via teleconference on September 18, 2008.

Brattstrom, B.H. and M.C. Bondello. 1983. Effects of off-road vehicle noise on desert vertebrates. In: Environmental Effects of Off-Road Vehilces, R.H. Webb and H.G. Wilshire (eds). Springer-Verlag, New York. Pp. 167-204.

Bureau of Land Management, Amended 2002, *California Desert Conservation Area Management Plan.*

Bureau of Land Management, 2005. *Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States*. (BLM, 2005)

Bureau of Land Management. 2007. Potential Fossil Yield Classification (PFYC) System for Paleontological Resources on Public Lands. Instructional

Memorandum No. 2008-009.

CARB (California Air Resources Board). 2008a. Ambient Air Quality Standards Chart (California and Federal). http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.

CARB (California Air Resources Board). 2003. Air Designations Maps. www.arb.ca.gov/desig/adm/adm.htm.

CARB (California Air Resources Board). 2007. California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit.

CCAR (California Climate Action Registry). 2009. General Reporting Protocol Version 3.1.

CEC (California Energy Commission). 2005. California's Water – Energy Relationship. CEC-700-2005-011-SF.

California Geological Survey, 2003. The Revised 2002 California Probabilistic Seismic Hazard Maps. California Geological Survey. California Highways website, 2006: http://www.cahighways.org.

California Government Code. Health and Safety Code. Section 65302(f) and Section 46050.1

California Integrated Waste Management Board, Active Landfills Profile for Victorville Sanitary Landfill (36-AA-0045), June 2009. (Available at http://www.ciwmb.ca.gov/SWIS/36-AA-0045/Detail/)

California Integrated Waste Management Board, Active Landfills Profile for Barstow Sanitary Landfill (36-AA-0046), June 2009. (Available at http://www.ciwmb.ca.gov/SWIS/36-AA-0046/Detail/)

California Trail Users Coalition. November 2006. San Bernardino National Forest and Barstow BLM Areas: Motorized and Non-Motorized Trails Map.

California Noise Insulation Standards. State Building Code—CCR, Part 2, Title 24.

Clean Water Act, 33 U.S.C. § 1251 et seq. Code of Federal Regulations, October 18, 1972.

Colorado Regional Water Quality Control Board, "Water Quality Control Plan for the Colorado River Region North and South Basins", California, 2005.

Comsearch. "Executive Summary-Wind Power GeoPlanner Licensed Microwave Search & Worst Case Fresnel Zone." Comsearch. July, 24, 2007

County of San Bernardino. *Community Profiles.* 2005. Available on the internet at: http://www.sbcounty.gov/eda/ed/contents/Comm_Profile.pdf

County of San Bernardino. Department of Airports website: http://www.sbcounty.gov/airports/Default.aspx

County of San Bernardino Department of Public Works website: http://www.sbcounty.gov/dpw/solidwaste/

Appendix A: Bibliography

County of San Bernardino, 2007. County of San Bernardino 2007 Development Code.

County of San Bernardino, 2007. County of San Bernardino 2007 General Plan.

County of San Bernardino, 2007. County of San Bernardino General Plan, Lucerne Valley Community Plan.

County of San Bernardino, 2007. County of San Bernardino General Plan, Homestead Valley Community Plan.

County of San Bernardino, 2005. Ordinance Chapter 87.0905.

County of San Bernardino, 2005. Ordinance No. 3966 (Wind Energy Systems).

County of San Bernardino, 2003. Ordinance No. 3900 (Dark Night Sky Protection).

Department for Better Innovative & Skills. Accessed on 6/16/2009 http://www.berr.gov.uk/energy/sources/renewables/planning/onshore-wind/shadow-flicker/page18736.html,

Energy Facility Site Evaluation Council (EFSEC). Accessed on 6/16/2009. http://www.efsec.wa.gov/wildhorse.shtml

County of San Bernardino, 2007. San Bernardino County Code- Title 8-Development Code, Chapter 82.03 Agricultural and Resource Management Land Use Zoning Districts. April.

County of San Bernardino, 2008. San Bernardino County Code- Title 8-Development Code, Chapter 82.24 Energy Facilities (EN) Overlay. October.

Department Of Conservation California Geological Survey, Special Publication 42, Fault-Rupture Hazard Zones In California, Interim Revision 2007

Department of Water Resources, California 's Groundwater - Bulletin 118, Update 2003.

Dibblee, T. W. Jr., 1967., Areal Geology Of The Western Mojave Desert, California. CDMG Professional Paper 522, 1967. 153pp + maps

Dibblee, T. W., Jr. 2008. Geologic Map of the Apple Valley and Ord Mountains 15 Minute Quadrangles. Dibblee Geology Center Map DF-377.

Drucker, P. "Culture Element Distributions, V: Southern California." University of California Anthropological Records 1.1 (1937).

Edwards Air Force Base, Environmental Management Office, Air Force Flight Test Center, 2002. *Final Integrated Natural Resource Management Plan for Edwards Air Force Base, California*. October.

Edwards Air Force Base, Environmental Management Office, Air Force Flight Test Center, 2008. *Draft Integrated Natural Resource Management Plan for Edwards Air Force Base, California, August.*

Federal Aviation Administration. DoD Preliminary Screening Tool. March 11, 2009. <https://oeaaa.faa.gov/oeaaa/external/gisTools/gisAction.jsp?action=showLongRangeRadarToolForm>

Federal Railroad Administration (FRA). 2005. High-Speed Ground Transportation Noise and Vibration Impact Assessment. HMMH Report No. 293630-4. October 2005.

Federal Transit Administration (FTA). 2006. Transit Noise and Vibration Impact Assessment. FTA-VA-90-1003-06, May 2006.

Federal Transit Administration. Department of Transportation. Transit Noise and Vibration Impact Assessment Manual. 2006. Vanasse Hangen Brustlin, Inc.

Granite Wind, LLC. *Economic and Fiscal Report for Granite Mountain Wind Project San Bernardino County, California*. July 2007.

Harris, Cyril M., ed. 1991. Handbook of Acoustical Measurements and Noise Control. Third Edition. McGraw-Hill, Inc. New York, NY.

Hoen, Ben, Ryan Wiser, Peter Cappers, mark Thayer, and Gautam Sethi. The Impact of Wind Power Projects on residential Property Values in the United States: A Multi-Site Hedonic Analysis. Ernesto Orlando Lawrence Berkeley National Laboratory. December 2009. http://www1.eere.energy.gov/windandhydro/pdfs/wind_power_projects_residential_property_values.pdf

IPCC (Intergovernmental Panel on Climate Change). 2007. Working Group III contribution to the Intergovernmental Panel on Climate Change Fourth Assessment Report, Climate Change 2007: Mitigation of Climate Change.

Interorganizational Committee on Guidelines and Principles for Social Impact Assessment. Prepared for the U.S. Department of Commerce. *Guidelines and Principles for Social Impact Assessment.* May 1994.

Jakobsen, Jorgen. "Infrasound Emission from Wind Turbines". Journal of Low Frequency Noise, Vibration and Active Control. Danish Environmental Protection Agency. Volume 24, No. 3. 2005.

Jefferson, G. T. 1991a. A catalogue of Late Quaternary Vertebraes from California: Part One, nonmarine lower vertebrate and avian taxa. Natural History Museum of Los Angeles County Technical Reports no. 5.

Jefferson, G. T. 1991b. A catalogue of Late Quaternary Vertebrates from California: Part Two, Mammals. Natural History Museum of Los Angeles County Technical Reports no. 7.

Kohler, Susan L., 2002. "Aggregate Availability in California, Fifty Year Aggregate Demand Compared to Permitted Aggregate Resource," California Department of Conservation.

Kroeber, A. L.

1953 Handbook of the Indians of California. Berkeley, Calif: California Book Co.,1953.

Kyle, D. E. Historic Spots in California. Palo Alto: Stanford University Press, 1990.

Lahontan Regional Water Quality Control Board, "Water Quality Control Plan for the

Lahontan Region North and South Basins", California, 1991.

Martinez, Amanda L., Nancy E. Sikes and Cindy J. Arrington. Cultural resources Inventory for the Bureau of Land Management California Desert District in Imperial, Riverside, and San Bernardino Counties, California. El Centro: Bureau of Land Management, California Desert District, 1661 South 4th Street, El Centro, California 92243, 2008.

Miller, & Matti, 2001,. Geologic Map of the Fifteenmile Valley 7.5' Quadrangle, San Bernardino County California, Open File Report 01.132., United States Geological Survey (USGS), 2001.

MDAQMD (Mojave Desert Air Quality Management District. 2009. California Environmental Quality Act (CEQA) and Federal Conformity Guidelines. http://www.mdaqmd.ca.gov/Modules/ShowDocument.aspx?documentid=1806

MDAQMD (Mojave Desert Air Quality Management District). Methods for Determining Emission Factors, http://www.mdaqmd.ca.gov/Modules/ShowDocument.aspx?documentid=1369

OPR (Governor's Office of Planning and Research). 2008. CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review.

Páez, V. P., Bock, B. C., and Rand, A. S. 1993. Inhibition of evoked calling of *Dendrobates pumilio* due to acoustic interference from cicada calling. Biotropica 25:242-245.

Peeke, H. V. S. and Petrinovich, L. (Eds.). 1984. *Habituation, sensitization, and behavior*. New York: Academic Press.471 pp.

Pierson, Erma

The Mohave River and its Valley. Glendale: The Arthur H. Clark Co, 1970.

Popp, J. W. 1989. Methods of measuring avoidance of acoustic interference. Animal Behaviour 38:358-360.

Rahn, Perry H., 1996. "Engineering Geology, An Environmental Approach," Second Edition, Prentice Hall.

Reherman, Clay N, Judith L. Rochat, Erich S. Thalheimer, Michael C. Lau, Gregg G. Fleming, Mark Ferroni, and Christopher Corbisier. 2006. FHWA RCNM, Version 1.0 User's Guide.. U.S. Department of Transportation, Federal Highway Administration. Cambridge, MA.

Rock, Jim. Tin Canisters, Their Identification. Manuscript in progress, 1988.

"Tin Can Chronology". IMACS Guide, 1990. <http://www.anthro.utah.edu/IMACs/471-TinCans.pdf>

Cans and Canning. Manuscript, 1998.

Ryan, M. J. and Brenowitz, E. A. 1985. The role of body size, phylogeny, and ambient noise in the evolution of bird song. American Naturalist 126:87-100.

San Bernardino County Library. San Bernardino County History 2009. <http://www.sbcounty.gov/main/history.asp>.

San Bernardino County Official Land Use Plan, General Plan, Regional Fault and Epicenter Map – Desert Region, 2006.

San Bernardino County Official Land Use Plan, General Plan, Geologic Hazard Overlay, Fairview Valley, EH32 C, 2006.

San Bernardino County Stormwater Program, "Water Quality Management Plan Template", California, June 9, 2005.

Secretary of the Air Force. AICUZ Program Manager's guide. Air Force Handbook 32-7084. March 1, 1999. <http://www.e-publishing.af.mil/shared/media/epubs/AFH32-7084.pdf>

SANDAG (San Diego Association of Governments). 1988. Draft comprehensive species management plan for the least Bell's vireo. Prepared by RECON Regional Environmental Consultants. January.

Southern California Associated Governments. *2008 Regional Transportation Plan (2008 RTP): Making the Connections.* May 2008. Available on the internet at: http://www.scag.ca.gov/rtp2008/index.htm

SCAQMD (South Coast Air Quality Management District). 2008a. Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold.

SCAQMD (South Coast Air Quality Management District). October 2006. Final Methodology to Calculate Particulate Matter $(PM)_{2.5}$ and $PM_{2.5}$ Significance Thresholds, http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html.

SCAQMD (South Coast Air Quality Management District). 2004. *Rule 403 Implementation Handbook.* June.

Southern California Earthquake Data Center (SCEDC), 2009. (http://www.data.scec.org/chrono_index/kerncoun.html).

State Water Recourses Control Board, "Construction Activities Storm Water General Permit (Order No. 99-08-DWQ)", California, 1999.

State of California, 2008, *Draft R-2508 Joint Land Use Study*. March.

Sterzinger, George, Fredric Beck, and Damian Kostiuk. The Effect of Wind Development on Local Property Values. Renewable Energy Policy Project. May 2003. http://www.repp.org/articles/static/1/binaries/wind_online_final.pdf

Stewart, S.P., 2000. "Seismic Ground Determination in Compacted Fill." Evaluation and Mitigation of Seismic Hazards Seminar, August, 2000.

Stickel, E. Gary and Lois J. Weinman. An overview of the cultural resources of the

Western Mojave Desert. Eric Ritter, Ed. Riverside, CA: The California Desert Planning Program and United States Bureau of Land Management Cultural Resources Publications, 1980.

Strong, W. D. "Aboriginal Society in Southern California." University of California Publications in American Archaeology and Ethnology 26.1 (1929).

Sutton, Mark. Q., Mark E. Basgall, Jill K. Gardner, and Mark W. Allen. "Advances in Understanding Mojave Desert Prehistory." In California Prehistory: Colonization, Culture, and Complexity, edited by T. L. Jones and K. Klar. Lanham, MD.: AltaMira Press, 2007.

SVP (Society of Vertebrate Paleontology), 1995. Assessment and mitigation of adverse impacts to nonrenewable paleontological resources: standard guidelines: Society of Vertebrate Paleontology New Bulletin, No. 163. pp. 22-27.

SVP (Society of Vertebrate Paleontology), 1996. Conditions of receivership for paleontological salvage collections: Society of Vertebrate Paleontology News Bulletin, No. 166, pp. 31-32.

TetraTech EC, Inc. 2009. Draft Biological Resources Report for Granite Mountain Wind Project, San Bernardino County California. Prepared for Granite Wind LLC. June 2009.

Tetra Tech EC, Inc. "Granite Mountain Wind Resource Area San Bernardino County, California" (Draft), California, April 3, 2009.

Tetra Tech EC, Inc., Nixon Peabody LLP for AWEA. February 2008. "Wind Energy Siting Handbook." American Wind Energy Association on the Web. 24 February 2009. <http://www.awea.org/sitinghandbook/download_center.html>

Terracon Consultants Inc. *Geotechnical Desktop Study, Proposed Granite Mountain Wind Farm, Lucerne Valley Area, San Bernardino County, California*. April 2007. Located in Appendix J.

Town of Apple Valley, 1998. Town of Apple Valley General Plan. Accessed February 12, 2009, at: http:/www.applevalley.org

Town of Apple Valley, 2009. Town of Apple Valley Draft General Plan Update.

Town of Apple Valley Planning Services Division in Cooperation with County Desert Airport Manager. March 1995."Town of Apple Valley Airport Draft Comprehensive Land Use Compatibility Plan." 24 February 2009. <http://www.applevalley.org/Index.aspx?page=249>

Town of Apple Valley Planning Services Division in Cooperation with County Desert Airport Manager. March 1995. "Draft Comprehensive Airport Land Use Plan." 24 February 2009 <http://www.co.san-bernardino.ca.us/landuseservices/ACLUPs/>

URS 2009. Class III Cultural Resources Technical Report. Prepared for the Granite Wind LLC and the Bureau of Land Management. Located in Appendix I.

URS, "Water Quality Management Plan for Granite Mountain Wind Project", California. June 30, 2008.

URS, Hazardous Materials Assessment Summary, Granite Mountain Wind Energy Project Site San Bernardino County, California, November 3, 2008.

USDA, Forest Service, 1995. Landscape Aesthetics, A Handbook for Scenery Management; Agriculture Handbook 701

USDA, Forest Service, 1973. National Forest Landscape Management, Vol. 1, Agriculture Handbook No.434, Government Printing Office, Washington D.C.

USDA, Forest Service, 1973. National Forest Landscape Management, Vol. I1, Agriculture Handbook No.462, Government Printing Office, Washington D.C.

USDI, Bureau of Land Management, 1980. California Desert Conservation Area Plan

USDI, Bureau of Land Management, 2009. IM 2009-043, Wind Energy Development Policy. http://windeis.anl.gov/

USDI, Bureau of Land Management, 1980. Visual Resources Management Program, Government Printing Office, Washington D.C.

USDI, Bureau of Land Management, 1984. Visual Resource Management - BLM Manual 8400. 5 April. Bureau of Land Management. Washington, DC. (online) URL: www.blm.gov/nstc/VRM/8400.html, accessed 2/20/2009.

USDI, Bureau of Land Management, 1986. Visual Resource Contrast Rating - BLM Manual 8431-1. 17 January. Bureau of Land Management. Washington, DC. (online) URL: http://www.blm.gov/nstc/VRM/8431.html, accessed 2/20/2009.

USDI, Bureau of Land Management, 1986. Visual Resource Inventory - BLM Manual 8410-1. 17 January. Bureau of Land Management. Washington, DC. (online) URL: http://www.blm.gov/nstc/VRM/8410.html, accessed 2/20/2009.

U.S. Census Bureau. *Census 2000 Summary File 3 (SF 3)*. Retrieved on January 2, 2009. Available on the internet at: http://factfinder.census.gov/servlet/DatasetMainPageServlet?_ds_name=DEC_2000_SF1_U&_program=DEC&_lang=en

U.S. Department of Economic Analysis. Bureau Of Economic Analysis. *Regional Economic Accounts-Bearfacts 1669-2006.* April 2008. Available on the internet at: http://www.bea.gov/regional/bearfacts/action.cfm?fips=06071&areatype=06071&yearin=2006

U.S. Department of the Interior, Bureau of Land Management, California Desert District. January 2005. Final Environmental Impact Report and Statement for the West Mojave Plan: A Habitat and Conservation Plan and California Desert Conservation Area Plan Amendment, Volume 1.

U.S. Department of the Interior, Bureau of Land Management. Amended 2002. California Desert Conservation Area Management Plan.

Appendix A: Bibliography

U.S. Department of Transportation. 2000. *Advisory Circular for Obstruction Marking and Lighting Guidelines, AC 70/7460-IK.* Federal Aviation Administration. April.

United States Department of Agriculture (USDA), 2009, "Web Soil Survey" (http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx).

This page intentionally left blank.

APPENDIX B: GLOSSARY

This page intentionally left blank.

Active Fault. A fault that has moved recently and that is likely to move again. It is usually defined as one that has shown movement within the last 11,000 years and can be expected to move again within the next 100 years.

Administrative Record. The administrative record includes the compilation of notices, background reports, and environmental review documents that provide a record of the environmental review, public involvement, and decision-making processes required by NEPA that are related to a project.

Aesthetics. The perception of artistic elements, or elements in the natural or human-made environment, that is pleasing to the eye.

Air Quality Criteria. Air quality criteria are the levels of pollution and length of exposure at which adverse effects on human health and welfare occur.

Air Quality Standards. Air quality standards are the prescribed level of pollutants in the outside air that cannot be exceeded legally during a specified time in a specified geographical area.

Alluvial Fan. A fan-shaped accumulation of disintegrated soil material deposited by water and located in a position where the water departs from a steep, narrow course to enter upon a flat plain or an open valley bottom.

Alquist-Priolo Special Study Zone. In 1972, the State of California began delineating Special Studies Zones around active and potentially active faults in the state. The zones extend about 660 feet on either side of identified fault traces. No structures for human occupancy may be built across an identified fault trace. An area of 50 feet on either side of an active fault trace is assumed to be underlain by the fault unless proven otherwise. Proposed construction within the Special Studies Zone can take place only following completion of a geotechnical report prepared by a California Registered Geologist or Certified Engineering Geologist.

Ambient Air. Ambient air is that portion of the atmosphere, outside of buildings, to which the general public has access.

Area of Critical Environmental Concern (ACEC). A Special Area designation established through the Bureau of Land Management's land use planning process (43 CFR 1610.7-2) where special management attention is needed to protect and prevent irreparable damage to important historical, cultural, or scenic values; fish and wildlife resources; or other natural systems or processes; or to protect life and safety from natural hazards. The level of allowable use within an ACEC is established through the collaborative planning process. Designation of an ACEC allows for resource use limitations to protect identified resources or values.

Arterial (Transportation). An arterial is a major street carrying the traffic of local and collector streets to and from freeways and other major streets, with controlled intersections, and generally providing direct access to non-residential properties.

Assessor's Parcel Number (APN). Given to a parcel or specified area of land by the county tax assessor.

Attainment. Attainment means that there is compliance with state and federal ambient air quality standards within an air basin.

A-Weighted Decibel (dBA). The dB on the A-weighted scale is the sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low- and very high-frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.

Basins. Basins are typically areas of shallow excavation where water percolation takes place. Flow of water into these basins brings suspended sediment, which is dropped to the basin floor by percolation of the water. This sediment requires periodic removal, which also tills the basin floor for percolation rates to remain efficient.

Biological Assessment (BA). A Biological Assessment is information prepared by, or under the direction of, a federal agency to determine whether a Proposed Action is likely to: (1) adversely affect listed species or designated critical habitat, (2) jeopardize the continued existence of species that are proposed for listing, or (3) adversely modify proposed critical habitat. Biological assessments must be prepared for "major construction activities." The outcome of this biological assessment determines whether formal consultation or a conference is necessary.

Biological Opinion (BO). A Biological Opinion is a document that includes (1) the opinion of the U.S. Fish and Wildlife Service or the National Marine Fisheries Service as to whether a federal action is likely to jeopardize the continued existence of listed species, or result in the destruction or adverse modification of designated critical habitat; (2) a summary of the information on which the opinion is based; and (3) a detailed discussion of the effects of the action on listed species or designated critical habitat.

BLM Lands. Any public lands managed by the Bureau of Land Management (BLM).

California Environmental Quality Act (CEQA). Enacted in 1970, CEQA requires state and local agencies to estimate and evaluate the environmental implications of their actions. It aims to prevent environmental effects of the agency's actions by requiring agencies, when feasible, to avoid or reduce the significant environmental impacts of their decisions. If a proposed activity has the potential for a significant adverse environmental impact, an environmental impact report (EIR) must be prepared and certified as to its adequacy before taking action on the proposed project (California Public Resources Code §§ 21000 et seq.)

Candidate Species. Plant and animal taxa considered for possible addition to the List of Endangered and Threatened Species. These are taxa for which the U.S. Fish and Wildlife Service has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposal to list; but issuance of a proposed rule is currently precluded by higher priority listing actions.

Capacity (Transportation). 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 time period under prevailing roadway, traffic, and control conditions.

Collector (Transportation). A relatively low-speed, low-volume street that provides circulation within and between neighborhoods. Collectors usually serve short trips and

are intended for collecting trips from local streets and distributing them to the arterial network.

Conditional Use Permit (CUP). Pursuant to a zoning ordinance, a conditional use permit may authorize uses not routinely allowed on a particular site. Conditional use permits require a public hearing, and if approval is granted, are usually subject to the fulfillment of certain conditions by the developer. Approval of a conditional use permit is not a change in zoning.

Council of Governments (COG). There are 25 Councils of Governments in California, made up of elected officials from member cities and counties. Councils of Governments are regional agencies concerned primarily with transportation planning and housing; they do not directly regulate land use. An example of a Council of Government is the Southern California Association of Governments.

Critical Habitat. Habitat designated by the U.S. Fish and Wildlife Service pursuant to Section 4 of the Endangered Species Act, under the following criteria: (1) specific areas within the geographical area occupied by the species at the time it is listed, on which are found those physical or biological features (a) essential to conservation of the species, and (b) which may require special management or protection; or (2) specific areas outside the geographical area occupied by the species at the time it is listed but considered essential to the conservation of the species.

Cultural Resources. Prehistoric and historic districts, sites, buildings, objects, or any other physical evidence of human activity considered important to a culture, subculture, or a community for scientific, traditional, religious, or any other reason.

Cultural Site. A physical location of past human activities or events. Cultural resource sites are extremely variable in size and range, from the location of a single cultural resource object to a cluster of cultural resource structures with associated objects and features. Prehistoric and historic sites, which are recorded as cultural resources, have sociocultural or scientific value and meet the criterion of being more than fifty years old.

Culverts. Typically, pipes or boxes used to pass water in a canal beneath a road crossing.

Cumulative Impact. The total impact resulting from the accumulated impacts of individual projects or programs over time.

Decibel (dB). The standard unit of measurement for sound pressure level and vibration level. Technically, a decibel is the unit of level which denotes the ratio between two quantities that are proportional to power; the number of decibels is 10 times the logarithm of this ratio. Also written as dB.

Disturbed Habitat. Disturbed habitat refers to areas that lack vegetation entirely but do not contain an impermeable surface. These areas are generally the result of severe or repeated mechanical perturbation.

Diversion Structures. Structures that divert water into basins. The diversion structures typically consist of concrete or cement block, with wooden gates and associated hardware. Activities include clearing encroaching vegetation, clearing of debris or sediment from the nearby canal, repair of the nearby canal, and repair of damage to the structure itself.

Emission Standard. The maximum amount of pollutant legally permitted to be discharged from a single source, either mobile or stationary.

Endangered Species. As defined in the Federal Endangered Species Act, any species which is in danger of extinction throughout all of a significant portion of its range. For terrestrial species, the U.S. Fish and Wildlife Service determines endangered status.

Environment. The physical conditions which exist within the area which will be affected by a proposed project, including land, air, water, mineral, flora, fauna, noise, and objects of historic or aesthetic significance.

Environmental Impact Report (EIR). A report required pursuant to the California Environmental Quality Act that assesses all the environmental characteristics of an area, determines what effects or impacts will result if the area is altered or disturbed by a proposed action, and identifies alternatives or other measures to avoid or reduce those impacts.

Erosion. The loosening and transportation of rock and soil debris by wind, rain, or running water or the gradual wearing away of the upper layers of earth.

Exotic Species. A species of plant or animal that is not native to the area in which it is found. Any species that is not indigenous, native, or naturalized.

Expansive Soils. Expansive soils generally have a significant amount of clay particles which can give up water (shrink) or take on water (swell). The change in volume exerts stress on buildings and other loads placed on these soils. The extent of shrink/swell is influenced by the amount and kind of clay in the soil. The occurrence of these soils is often associated with geologic units having marginal stability. The distribution of expansive soils can be widely dispersed, and they can occur in hillside areas as well as low-lying alluvial basins.

Fault Zone. Represents a collection of relatively smaller-scale fault segments and fault strands which typically have a similar strike, dip, and sense of movement.

Fault. A fault is a fracture in the earth's crust that forms a boundary between rock masses that have shifted.

Feasible. Capable of being accomplished in a successful manner within a reasonable time, taking into account economic, environmental, social, and technological factors.

Federal Land. Land owned by the United States, without reference to how the land was acquired or which federal agency administers the land, including mineral and coal estates underlying private surface.

Fill. This category is a catch-all for a wide range of aggregate uses ranging from general construction fill for altering landforms to trench backfill and pipe bedding. Depending on the use, this material can consist of crushed and graded aggregate and sand.

Flood Insurance Rate Map (FIRM). For each community, FIRM is the official map on which the Federal Insurance Administration has delineated areas of special flood hazard and the risk premium zones applicable to that community.

Flood, 100-Year. The 100-year flood is the magnitude of a flood expected to occur, on average, every 100 years, based on historical data. The 100-year flood has a $1/100_{th}$, or 1.0 percent, chance of occurring in any given year.

Floodplain. A lowland or relatively flat area adjoining inland or coastal waters that is subject to a 1.0 percent or greater chance of flooding in any given year (i.e., 100-year flood).

Freeway. A high-speed, high-capacity, limited-access road serving regional and countywide travel. Such roads are free of tolls, as contrasted with turnpikes or other toll roads. Freeways generally are used for long trips between major land use generators. Major streets cross at a different grade level.

General Plan. A fundamental policy document for a local government (i.e., county or city) usually including a plan establishing zones of allowable land uses and intensity of use (e.g., residential, commercial, industrial, open space).

Ground Failure. Ground movement or rupture caused by strong shaking during an earthquake. It includes landslide, lateral spreading, liquefaction, and subsidence.

Ground Shaking. Ground movement resulting from the transmission of seismic waves during an earthquake.

Groundwater Recharge. The natural process of infiltration and percolation of rainwater from land areas or streams through permeable soils into water-holding rocks that provide underground storage (aquifers).

Groundwater. Water under the earth's surface, often confined to aquifers capable of supplying wells and springs.

Habitat Conservation Plan (HCP). A comprehensive planning document pursuant to Section 10(a)(2) of the Endangered Species Act that is a mandatory component of an incidental take permit for a project with no federal nexus.

Habitat. The physical location or type of environment in which an organism or biological population lives or occurs.

Hazardous Material. A substance or combination of substances that because of 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 environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Hazardous Waste. Hazardous material that cannot be reused or recycled.

Historic Preservation. The preservation of historically significant structures and neighborhoods in order to facilitate restoration and rehabilitation of the building(s) to a former condition.

Inactive Fault. An inactive fault is one that shows no evidence of movement in recent geologic time and no potential for movement in the relatively near future.

Incidental Take. Take of any listed species under the Federal and State Endangered Species Acts that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Also referred to as “take”.

Land Use. Any land use is the determination by a governing authority of the use to which land within its jurisdiction may be put so as to promote the most advantageous development of the community.

Lead Agency. The public agency that has the principal responsibility for carrying out or approving a project. The Lead Agency decides whether an EIR or Negative Declaration is required for a project and causes the appropriate document to be prepared.

Level of Service (LOS). LOS is a qualitative measure describing operational conditions within a traffic stream and how motorists and/or passengers perceive them.

Liquefaction. Liquefaction is the state or process in which soil material is transformed from a solid into a liquid state, due to increased pore pressure and reduced effective stress. Soil may become liquefied, for example, during and immediately following an earthquake.

Local Cooperation Agreement. A Local Cooperation Agreement is the same as a Project Cooperation Agreement, which is a legally binding contract between the U.S. Army Corps of Engineers and a non-federal sponsor that sets forth the responsibilities of each party in the implementation of a project. This document includes the items of local cooperation.

Migratory Bird Treaty Act (16 U.S.C. § 703 [1994]), as amended. The Migratory Bird Treaty Act was originally drafted in 1916 and later agreed on between the United States and Canada, and subsequently between the United States and Mexico. The Migratory Bird Treaty Act, along with subsequent amendments, provides legal protection for almost all breeding bird species occurring in the United States. The Migratory Bird Treaty Act restricts the killing, taking, collecting, and selling or purchasing of native bird species or their parts, nests, or eggs. The treaty allows hunting of certain game bird species, for specific periods, as determined by federal and state governments. The intent of the Migratory Bird Treaty Act is to eliminate any commercial market for migratory birds, feathers, or bird parts, especially for eagles and other birds of prey.

Mineral Resource Zones (MRZs). MRZs are zones that have been identified as having potential mineral and aggregate resources. The California State Mining and Geology Board recommends that MRZ lands be preserved as open space or used for interim uses to allow for future extraction.

MRZ-1: Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence. This zone shall be applied where well-developed lines of reasoning, based upon economic geologic principles and adequate data, demonstrate that the likelihood for occurrence of significant mineral deposits is nil or slight.

MRZ-2: Areas where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood for their presence exists. This zone shall be applied to known mineral deposits or where well-developed lines of reasoning, based upon economic geologic principles and adequate data, demonstrate that the likelihood for occurrence of significant mineral deposits is high.

Mitigation Measure. A change in a project designed to avoid, minimize, rectify, reduce, or compensate for a significant environmental impact.

National Ambient Air Quality Standards (NAAQS. National standards established under the Clean Air Act by the Environmental Protection Agency (EPA). These standards prescribe levels of pollution in the outdoor air which may not be exceeded. There are two levels of NAAQS: primary, set at a level to protect the public health from air pollution damage; and secondary, set at a level to protect public welfare from air pollution damage.

National Historic Preservation Act of 1966 (NHPA). The primary federal law providing for the protection and preservation of cultural resources. The NHPA established the National Register of Historic Places (NRHP, the Advisory Council on Historical Preservation (ACHP), and the State Offices of Historic Preservation (OHP).

National Pollutant Discharge Elimination System (NPDES) Permits. According to the NPDES Program (Federal Clean Water Act), any person responsible for the discharge of a pollutant or pollutants into any waters of the United States from any point source must apply for and obtain a permit. According to Section 402 of the CWA, the Environmental Protection Agency is the issuing authority for all NPDES permits in a state until such time as the state elects to take over the administration and obtains EPA approval of its programs. (The State Water Resources Control Board has this authority in California.) Dischargers are required to disclose the volume and nature of their discharges. Further, the EPA or equivalent state agency has the authority to specify limitations to be imposed on discharges and to require monitoring and reporting as to compliance or non-compliance.

National Register of Historic Places (NRHP). A list of buildings, sites, districts, structures and objects significant in American history, architecture, archeology, and culture maintained by the Secretary of the Interior. Expanded as authorized by Section 2(b) of the Historic Sites Act of 1935 (16 U.S.C. 463) and Section 101(a)(1)(A) of the National Historic Preservation Act.

Native (Indigenous) Species. A species of plant or animal that naturally occurs in an area and that was not introduced by humans.

Natural Community Conservation Planning (NCCP). Regional conservation planning efforts that have been conducted in accordance with the Natural Community Conservation Planning (NCCP) Act of 1991 are designed to provide protection and

conservation to threatened and endangered species through a multi-species habitat-based and long-term approach which both ensures a balance between the conservation of the species and habitats and the economic growth of the community in which they exist. The NCCP process provides an alternative to protecting species on a single-species basis, as in the Federal Endangered Species Act (ESA) and California Endangered Species Act (CESA. Under the NCCP Act, the California Department of Fish and Game (CDFG) is responsible for implementing process planning and conservation guidelines for NCCP programs. Local governments and landowners may then prepare the NCCPs so that they comply with both the ESA and CESA. The first program under the NCCP Act addressed coastal sage scrub habitat and the species that inhabit or use coastal sage scrub, focusing on coastal sage scrub habitat protection and the preparation of NCCPs within southern California, including portions of Los Angeles, San Bernardino, Riverside, San Diego, and Orange Counties.

Noise. Any sound that is undesirable because it interferes with speech and/or hearing, or is intense enough to damage hearing, or is otherwise annoying (unwanted sound).

Occupied Critical Habitat. Critical habitat that contains individuals of the species at the time of the project analysis. A species does not have to occupy critical habitat throughout the year for the habitat to be considered occupied (e.g., migratory birds). Subsequent events affecting the species may result in this habitat becoming unoccupied.

Ozone. A colorless gas formed by a complex series of chemical and photochemical reactions of reactive organic gasses, principally hydrocarbons, with the oxides of nitrogen, which is harmful to the public health, the biota, and some materials; a molecule of three oxygen atoms, O3. A principle component of “oxidant” in photochemically polluted atmospheres.

Particulate Matter (particles). Very fine-sized solid matter or droplets, typically averaging one micron or smaller in diameter.

Peak Hour (Transportation). The hour of highest traffic volume on a given section of roadway between 7:00 AM and 9:00 AM or between 4:00 PM and 6:00 PM.

Percolation Basin. Aboveground storage place built so as to encourage the percolation of water contained therein underground.

Potentially Active Fault. A potentially active fault can be: (1) A fault that last moved within the Quaternary Period before the Holocene Epoch (the last 2 million to 11 thousand years); and/or (2) a fault that, because it is judged to be capable of ground rupture or shaking, poses an unacceptable risk for a proposed structure.

Project Description. A project description describes the basic characteristics of the project; including location, need for the project, project objectives, technical and environmental characteristics, project size and design, project phasing, and required permits. The level of detail provided in the project description varies according to the type of environmental document prepared.

Right-of-way. An easement, lease, permit, or license across an area or strip of land to allow access or to allow a utility to pass through public or private lands.

Riparian. Riparian land is of or relating to land lying immediately adjacent to a river or stream and having specific characteristics of that transitional area (e.g., riparian vegetation).

Riprap. Large cobble or boulders generally in excess of one foot in diameter. Riprap is used to protect creek banks and shorelines from the erosive forces of currents or wave action. It is also used at culvert outflows to absorb energy and prevent soil erosion.

Ruderal. Ruderal refers to a species or plant community that occurs on a highly disturbed site.

Section 4 of the Endangered Species Act of 1973, as amended. Section 4 outlines procedures and criteria for: (1) identifying and listing threatened and endangered species; (2) identifying, designating, and revising critical habitat; (3) developing and revising recovery plans; and (4) monitoring species removed from the list of threatened or endangered species.

Section 7 of the Endangered Species Act of 1973, as amended. Section 7 outlines procedures for interagency cooperation to conserve federally listed species and designated critical habitats. Section 7(a)(1) requires federal agencies to use their authority to further the conservation of listed species. Section 7(a)(2) requires federal agencies to consult to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Other paragraphs of this section establish the requirement to conduct conferences on proposed species, allow applicants to initiate early consultation, and require the U.S. Fish and Wildlife Service and National Marine Fisheries Service to prepare biological opinions and issue incidental take statements. Section 7 also establishes procedures for seeking exemptions from the requirements of Section 7(a)(2) from the Endangered Species Committee.

Section 9 of the Endangered Species Act of 1973, as amended. Section 9 prohibits the taking of endangered species of fish and wildlife. Additional prohibitions include: (1) import or export of endangered species or products made from endangered species; (2) interstate or foreign commerce in listed species or their products; and (3) possession of unlawfully taken endangered species.

Section 10 of the Endangered Species Act of 1973, as amended. Section 10 provides exceptions to Section 9 prohibitions. The exceptions most relevant to Section 7 consultations are takings allowed by two kinds of permits issued by the U.S. Fish and Wildlife Service and National Marine Fisheries Service: (1) scientific take permits; and (2) incidental take permits. The U.S. Fish and Wildlife Service and National Marine Fisheries Service can issue permits to take listed species for scientific purposes, or to enhance the propagation or survival of listed species. The U.S. Fish and Wildlife Service and National Marine Fisheries Service can also issue permits to take listed species incidental to otherwise legal activity.

Sensitive Receptors. Sensitive receptors are people or institutions with people, such as the elderly, very young children, people already weakened by illness (e.g., asthmatics) that are particularly susceptible to illness from environmental pollution or noise, and persons engaged in strenuous exercise.

Special Status Species. Plant or animal species listed as endangered, threatened, candidate or sensitive by federal or state governments.

Streambed Alteration Agreement (California Fish and Game Code, Sections 1600 et seq.). Defines the responsibilities of CDFG and requires public and private applicants to obtain an agreement for projects which would "divert, obstruct, or change the natural flow or bed, channel, or bank of any river, stream, or lake designated by CDFG in which there is at any time an existing fish or wildlife resource or from which those resources derive benefit, or would use material from the streambed designated by the department." CDFG wardens and/or unit biologists typically have the responsibility for formulating and issuing Streambed Alteration Agreements.

Subsidence. Ground subsidence is typically a gradual settling or sinking of the ground surface, with little or no horizontal movement, although fissures (cracks and separations) are common. Subsidence can range from small or local collapses to broad regional lowering of the earth's surface. The causes of subsidence are as diverse as the forms of failure, and include: dewatering of peat or organic soils; dissolution in limestone aquifers; first-time wetting of moisture-deficient, low-density soils (hydrocompaction); natural compaction; liquefaction; crustal deformation; subterranean mining; and withdrawal of fluids (groundwater, petroleum, or geothermal). Most of the damage caused by subsidence is the result of oil, gas, or groundwater extraction from below the ground surface, or the organic decomposition of peat deposits. Ground subsidence may occur as a response to natural forces, such as earthquake movements, which can cause abrupt elevation changes of several feet.

Take. To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect listed species, or attempt to engage in any such conduct. Harm is defined by U.S. Fish and Wildlife Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined by U.S. Fish and Wildlife Service as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns that include, but are not limited to, breeding, feeding, or sheltering.

Threatened Species. Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Total Suspended Particulates. Solid or liquid particles small enough to remain suspended in air. PM_{10} is the portion of TSP that can be inhaled.

Utility Corridor. A linear corridor usually designed for facilities such as power lines, pipelines, fiber-optic cables, roads, etc.

Viewshed. The landscape that can be directly seen under favorable atmospheric conditions from a viewpoint or along a transportation corridor.

Volume (Transportation). The volume of traffic is the total number of vehicles that pass over a given point or section of a roadway during a given time interval. Volumes may be expressed in terms of annual, daily, hourly, or sub-hourly periods.

Wastewater. Wastewater is water carrying dissolved or suspended solids from homes, farms, businesses, and industries. The wastewater treatment process includes any process that modifies characteristics of the wastewater, usually for the purpose of meeting effluent standards.

Watershed. A region drained by a stream, lake, or other body of water. In other words, it is a bowl or basin-shaped area in which all water within the area (rain, snow, etc.) will flow to the same outlet point. The Santa Ana River watershed is located in southern California, south and east of the City of Los Angeles. The watershed includes much of Orange County, the northwestern corner of Riverside County, the southwestern corner of San Bernardino County, and a small portion of Los Angeles County.

Wetlands. Lands traditionally between upland and aquatic environments. Wetlands are generally highly productive environments with abundant fish, wildlife, esthetic, and natural resource values. For this reason, coupled with the alarming rate of their destruction, they are considered valuable resources, and several regulations and laws have been implemented to protect them.

Zoning. Regulation by zone districts of the height, use, and area of structures, the use of land, and the density of population and intensity of allowable uses.

This page intentionally left blank.