NOTATION

The following is a list of acronyms and abbreviations, chemical names, and units of measure used in this document. Some acronyms used only in tables may be defined only in those tables.

GENERAL ACRONYMS AND ABBREVIATIONS

AADT	annual average daily traffic
AASHTO	American Association of State Highway and Transportation Officials
AC	alternating current
ACC	air-cooled condenser
ACEC	Area of Critical Environmental Concern
ADEQ	Arizona Department of Environmental Quality
ACHP	Advisory Council on Historic Preservation
ADOT	Arizona Department of Transportation
ADWR	Arizona Department of Water Resources
AERMOD	AMS/EPA Regulatory Model
AFC	Application for Certification
AGL	above ground level
AIM	Assessment, Inventory and Monitoring
AIRFA	American Indian Religious Freedom Act
AMA	active management area
AML	animal management level
ANHP	Arizona National Heritage Program
APE	area of potential effect
APLIC	Avian Power Line Interaction Committee
APP	Avian Protection Plan
APS	Arizona Public Service
AQCR	Air Quality Control Region
AQRV	air quality–related value
ARB	Air Resources Board
ARRA	American Recovery and Reinvestment Act of 2009
ARRTIS	Arizona Renewable Resource and Transmission Identification Subcommittee
ARS	Agricultural Research Service
ARZC	Arizona and California
ATSDR	Agency for Toxic Substances and Disease Registry
AUM	animal unit month
AVSE	Arlington Valley Solar Energy
AVWS	Audio Visual Warning System
AWBA	Arizona Water Banking Authority
AWEA	American Wind Energy Association
AWRM	Active Water Resource Management
AZDA	Arizona Department of Agriculture
AZGFD	Arizona Game and Fish Department

AZGS	Arizona Geological Survey
BA	biological assessment
BAP	base annual production
BEA	Bureau of Economic Analysis
BISON-M	Biota Information System of New Mexico
BLM	Bureau of Land Management
BLM-CA	Bureau of Land Management, California
BMP	best management practice
BNSF	Burlington Northern Santa Fe
BO	biological opinion
BOR	U.S. Bureau of Reclamation
BPA	Bonneville Power Administration
BRAC	Blue Ribbon Advisory Council on Climate Change
BSE	Beacon Solar Energy
BSEP	Beacon Solar Energy Project
BTS	Bureau of Transportation Statistics
CAA	Clean Air Act
CAAQS	California Air Quality Standards
CAISO	California Independent System Operator
Caltrans	California Department of Transportation
C-AMA	California-Arizona Maneuver Area
CAP	Central Arizona Project
CARB	California Air Resources Board
CAReGAP	California Regional Gap Analysis Project
CASQA	California Stormwater Quality Association
CASTNET	Clean Air Status and Trends NETwork
CAWA	Colorado Agricultural Water Alliance
CCC	Civilian Conservation Corps
CDC	Centers for Disease Control and Prevention
CDCA	California Desert Conservation Area
CDFG	California Department of Fish and Game
CDNCA	California Desert National Conservation Area
CDOT	Colorado Department of Transportation
CDOW	Colorado Division of Wildlife (now Colorado Parks and Wildlife)
CDPHE	Colorado Department of Public Health and Environment
CDWR	California Department of Water Resources
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CES	constant elasticity of substitution
CESA	California Endangered Species Act
CESF	Carrizo Energy Solar Farm
CFR	*Code of Federal Regulations*
CGE	computable general equilibrium
CHAT	crucial habitat assessment tool

CIRA	Cooperative Institute for Research in the Atmosphere
CLFR	compact linear Fresnel reflector
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNHP	Colorado National Heritage Program
Colorado DWR	Colorado Division of Water Resources
CO_2e	carbon dioxide equivalent
CPC	Center for Plant Conservation
CPUC	California Public Utilities Commission
CPV	concentrating photovoltaic
CRBSCF	Colorado River Basin Salinity Control Forum
CREZ	competitive renewable energy zone
CRPC	Cultural Resources Preservation Council
CRSCP	Colorado River Salinity Control Program
CSA	Candidate Study Area
CSC	Coastal Services Center
CSFG	carbon-sequestration fossil generation
CSP	concentrating solar power
CSQA	California Stormwater Quality Association
CSRI	Cultural Systems Research, Incorporated
CTG	combustion turbine generator
CTPG	California Transmission Planning Group
CTSR	Cumbres & Toltec Scenic Railroad
CUP	Conditional Use Permit
CVP	Central Valley Project
CWA	Clean Water Act
CWCB	Colorado Water Conservation Board
CWHRS	California Wildlife Habitat Relationship System
DC	direct current
DEM	digital elevation model
DHS	U.S. Department of Homeland Security
DIMA	Database for Inventory, Monitoring and Assessment
DLT	dedicated-line transmission
DNA	Determination of NEPA Adequacy
DNI	direct normal insulation
DNL	day-night average sound level
DoD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DOL	U.S. Department of Labor
DOT	U.S. Department of Transportation
DRECP	California Desert Renewable Energy Conservation Plan
DSM	demand-side management
DSRP	Decommissioning and Site Reclamation Plan
DTC/C-AMA	Desert Training Center/California–Arizona Maneuver Area

DWMA	Desert Wildlife Management Area
DWR	Division of Water Resources
EA	environmental assessment
EBID	Elephant Butte Irrigation District
ECAR	East Central Area Reliability Coordination Agreement
ECOS	Environmental Conservation Online System (USFWS)
EERE	Energy Efficiency and Renewable Energy (DOE)
Eg	band gap energy
EIA	Energy Information Administration (DOE)
EIS	environmental impact statement
EISA	Energy Independence and Security Act of 2007
EMF	electromagnetic field
E.O.	Executive Order
EPA	U.S. Environmental Protection Agency
EPRI	Electric Power Research Institute
EQIP	Environmental Quality Incentives Program
ERCOT	Electric Reliability Council of Texas
ERO	Electric Reliability Organization
ERS	Economic Research Service
ESA	Endangered Species Act of 1973
ESRI	Environmental Systems Research Institute
FAA	Federal Aviation Administration
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FLPMA	Federal Land Policy and Management Act of 1976
FONSI	Finding of No Significant Impact
FR	*Federal Register*
FRCC	Florida Reliability Coordinating Council
FSA	Final Staff Assessment
FTE	full-time equivalent
FY	fiscal year
G&TM	generation and transmission modeling
GCRP	U.S. Global Climate Research Program
GDA	generation development area
GHG	greenhouse gas
GIS	geographic information system
GMU	game management unit
GPS	global positioning system
GTM	Generation and Transmission Model

GUAC	Groundwater Users Advisory Council
GWP	global warming potential
HA	herd area
HAP	hazardous air pollutant
HAZCOM	hazard communication
HCE	heat collection element
HCP	Habitat Conservation Plan
HMA	herd management area
HMMH	Harris Miller Miller & Hanson, Inc.
HRSG	heat recovery steam generator
HSPD	Homeland Security Presidential Directive
HTF	heat transfer fluid
HUC	hydrologic unit code
HVAC	heating, ventilation, and air-conditioning
I	Interstate
IARC	International Agency for Research on Cancer
IBA	important bird area
ICE	internal combustion engine
ICPDS	Imperial County Planning & Development Services
ICWMA	Imperial County Weed Management Area
IDT	interdisplinary team
IEC	International Electrochemical Commission
IFR	instrument flight rule
IID	Imperial Irrigation District
IM	Instruction Memorandum
IMPS	Iron Mountain Pumping Station
IMS	interim mitigation strategy
INA	Irrigation Non-Expansion Area
IOP	Interagency Operating Procedure
IOU	investor-owned utility
IPCC	Intergovernmental Panel on Climate Change
ISA	Independent Science Advisor; Instant Study Area
ISB	Intermontane Seismic Belt
ISCC	integrated solar combined cycle
ISDRA	Imperial Sand Dunes Recreation Area
ISEGS	Ivanpah Solar Energy Generating System
ISO	independent system operator; iterative self-organizing
ITFR	Interim Temporary Final Rulemaking
ITP	incidental take permit
IUCNNR	International Union for Conservation of Nature and Natural Resources
IUCNP	International Union for Conservation of Nature Pakistan
KGA	known geothermal resources area
KML	keyhole markup language

KOP	key observation point
KSLA	known sodium leasing area
LCC	Landscape Conservation Cooperative
LCCRDA	Lincoln County Conservation, Recreation, and Development Act of 2004
LCOE	levelized cost of energy
L_{dn}	day-night average sound level
LDWMA	Low Desert Weed Management Area
L_{eq}	equivalent sound pressure level
LiDAR	light detection and ranging
LLA	limited land available
LLRW	low-level radioactive waste (waste classification)
LPN	listing priority number
LRG	Lower Rio Grande
LSA	lake and streambed alteration
LSE	load-serving entity
LTMP	long-term monitoring and adaptive management plan
LTVA	long-term visitor area
MAAC	Mid-Atlantic Area Council
MAIN	Mid-Atlantic Interconnected Network
MAPP	methyl acetylene propadiene stabilizer; Mid-Continent Area Power Pool
MCAS	Marine Corps Air Station
MCL	maximum contaminant level
MEB	Marine Expeditionary Brigade
MFP	Management Framework Plan
MIG	Minnesota IMPLAN Group
MLA	maximum land available
MOA	military operating area
MOU	Memorandum of Understanding
MPDS	maximum potential development scenario
MRA	Multiple Resource Area
MRI	Midwest Research Institute
MRO	Midwest Reliability Organization
MSDS	Material Safety Data Sheet
MSL	mean sea level
MTR	military training route
MVEDA	Mesilla Valley Economic Development Alliance
MWA	Mojave Water Agency
MWD	Metropolitan Water District
MWMA	Mojave Weed Management Area
NAAQS	National Ambient Air Quality Standard(s)
NADP	National Atmospheric Deposition Program
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission (California)
NAIC	North American Industrial Classification System

NASA	National Aeronautics and Space Administration
NCA	National Conservation Area
NCCAC	Nevada Climate Change Advisory Committee
NCDC	National Climatic Data Center
NCES	National Center for Education Statistics
NDAA	National Defense Authorization Act
NDCNR	Nevada Department of Conservation and Natural Resources
NDEP	Nevada Division of Environmental Protection
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NDWP	Nevada Division of Water Planning
NDWR	Nevada Division of Water Resources
NEAP	Natural Events Action Plan
NEC	National Electric Code
NED	National Elevation Database
NEP	Natural Events Policy
NEPA	National Environmental Policy Act of 1969
NERC	North American Electricity Reliability Corporation
NGO	non-governmental organization
NHA	National Heritage Area
NHD	National Hydrography Dataset
NHNM	National Heritage New Mexico
NHPA	National Historic Preservation Act of 1966
NID	National Inventory of Dams
NLCS	National Landscape Conservation System
NMAC	*New Mexico Administrative Code*
NMBGMR	New Mexico Bureau of Geology and Mineral Resources
NMDGF	New Mexico Department of Game and Fish
NM DOT	New Mexico Department of Transportation
NMED	New Mexico Environment Department
NMED-AQB	New Mexico Environment Department-Air Quality Board
NMFS	National Marine Fisheries Service
NMOSE	New Mexico Office of the State Engineer
NMSU	New Mexico State University
NNHP	Nevada Natural Heritage Program
NNL	National Natural Landmark
NNSA	National Nuclear Security Administration
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NP	National Park
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPS	National Park Service
NPV	net present value
NRA	National Recreation Area

NRCS	Natural Resources Conservation Service
NREL	National Renewable Energy Laboratory
NRHP	*National Register of Historic Places*
NRS	*Nevada Revised Statutes*
NSC	National Safety Council
NSO	no surface occupancy
NSTC	National Science and Technology Council
NTHP	National Trust for Historic Preservation
NTS	Nevada Test Site
NTTR	Nevada Test and Training Range
NVCRS	Nevada Cultural Resources Inventory System
NV DOT	Nevada Department of Transportation
NWCC	National Wind Coordinating Committee
NWI	National Wetlands Inventory
NWIS	National Water Information System (USGS)
NWPP	Northwest Power Pool
NWR	National Wildlife Refuge
NWSRS	National Wild and Scenic River System
O&M	operation and maintenance
ODFW	Oregon Department of Fish and Wildlife
OHV	off-highway vehicle
ONA	Outstanding Natural Area
ORC	organic Rankine cycle
OSE/ISC	Office of the State Engineer/Interstate Stream Commission
OSHA	Occupational Safety and Health Administration
OTA	Office of Technology Assessment
PA	Programmatic Agreement
PAD	Preliminary Application Document
PAH	polycyclic aromatic hydrocarbon
PAT	peer analysis tool
PCB	polychlorinated biphenyl
PCM	purchase change material
PCS	power conditioning system
PCU	power converting unit
PEIS	programmatic environmental impact statement
PFYC	potential fossil yield classification
PGH	Preliminary General Habitat
PIER	Public Interest Energy Research
P.L.	Public Law
PLSS	Public Land Survey System
PM	particulate matter
$PM_{2.5}$	particulate matter with a diameter of 2.5 μm or less
PM_{10}	particulate matter with a diameter of 10 μm or less
PPA	Power Purchase Agreement

P-P-D	population-to-power density
PPH	Preliminary Priority Habitat
POD	plan of development
POU	publicly owned utility
PPA	Power Purchase Agreement
PPE	personal protective equipment
PSD	Prevention of Significant Deterioration
PURPA	Public Utility Regulatory Policy Act
PV	photovoltaic
PVID	Palo Verde Irrigation District
PWR	public water reserve
QRA	qualified resource area
R&I	relevance and importance
RAC	Resource Advisory Council
RCE	Reclamation Cost Estimate
RCI	residential, commercial, and industrial (sector)
RCRA	Resource Conservation and Recovery Act of 1976
RD&D	research, development, and demonstration; research, development, and deployment
RDBMS	Relational Database Management System
RDEP	Restoration Design Energy Project
REA	Rapid Ecoregional Assessment
REAT	Renewable Energy Action Team
REDA	Renewable Energy Development Area
REDI	Renewable Energy Development Infrastructure
REEA	Renewable Energy Evaluation Area
ReEDS	Regional Energy Deployment System
REPG	Renewable Energy Policy Group
RETA	Renewable Energy Transmission Authority
RETAAC	Renewable Energy Transmission Access Advisory Committee
RETI	Renewable Energy Transmission Initiative
REZ	renewable energy zone
RF	radio frequency
RFC	Reliability First Corporation
RFDS	reasonably foreseeable development scenario
RGP	Rio Grande Project
RGWCD	Rio Grande Water Conservation District
RMP	Resource Management Plan
RMPA	Rocky Mountain Power Area
RMZ	Resource Management Zone
ROD	Record of Decision
ROI	region of influence
ROS	recreation opportunity spectrum
ROW	right-of-way

RPG	renewable portfolio goal
RPS	Renewable Portfolio Standard
RRC	Regional Reliability Council
RSEP	Rice Solar Energy Project
RSI	Renewable Systems Interconnection
RTO	regional transmission organization
RTTF	Renewable Transmission Task Force
RV	recreational vehicle
SAAQS	State Ambient Air Quality Standard(s)
SAMHSA	Substance Abuse and Mental Health Services Administration
SCADA	supervisory control and data acquisition
SCE	Southern California Edison
SCRMA	Special Cultural Resource Management Area
SDRREG	San Diego Regional Renewable Energy Group
SDWA	Safe Drinking Water Act of 1974
SEGIS	Solar Energy Grid Integration System
SEGS	Solar Energy Generating System
SEI	Sustainable Energy Ireland
SEIA	Solar Energy Industrial Association
SES	Stirling Energy Systems
SETP	Solar Energy Technologies Program (DOE)
SEZ	solar energy zone
SHPO	State Historic Preservation Office(r)
SIP	State Implementation Plan
SLRG	San Luis & Rio Grande
SMA	Special Management Area
SMART	specific, measurable, achievable, relevant, and time sensitive
SMP	suggested management practice
SNWA	Southern Nevada Water Authority
SPP	Southwest Power Pool
SRMA	Special Recreation Management Area
SSA	Socorro Seismic Anomaly
SSI	self-supplied industry
ST	solar thermal
STG	steam turbine generator
SUA	special use airspace
SWAT	Southwest Area Transmission
SWIP	Southwest Intertie Project
SWPPP	Stormwater Pollution Prevention Plan
SWReGAP	Southwest Regional Gap Analysis Project
TAP	toxic air pollutant
TCC	Transmission Corridor Committee
TDS	total dissolved solids
TEPPC	Transmission Expansion Planning Policy Committee

TES	thermal energy storage
TRACE	Transmission Routing and Configuration Estimator
TSA	Transportation Security Administration
TSCA	Toxic Substances Control Act of 1976
TSDF	treatment, storage, and disposal facility
TSP	total suspended particulates
UACD	Utah Association of Conservation Districts
UBWR	Utah Board of Water Resources
UDA	Utah Department of Agriculture
UDEQ	Utah Department of Environmental Quality
UDNR	Utah Department of Natural Resources
UDOT	Utah Department of Transportation
UDWQ	Utah Division of Water Quality
UDWR	Utah Division of Wildlife Resources
UGS	Utah Geological Survey
UNEP	United Nations Environmental Programme
UNPS	Utah Native Plant Society
UP	Union Pacific
UREZ	Utah Renewable Energy Zone
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USC	*United States Code*
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
Utah DWR	Utah Division of Water Rights
UTTR	Utah Test and Training Range
UWS	Underground Water Storage, Savings and Replenishment Act
VACAR	Virginia–Carolinas Subregion
VCRS	Visual Contrast Rating System
VFR	visual flight rule
VOC	volatile organic compound
VRHCRP	Virgin River Habitat Conservation & Recovery Program
VRI	Visual Resource Inventory
VRM	Visual Resource Management
WA	Wilderness Area
WECC	Western Electricity Coordinating Council
WECC CAN	Western Electricity Coordinating Council–Canada
WEG	wind erodibility group
Western	Western Area Power Administration
WGA	Western Governors' Association
WGFD	Wyoming Game and Fish Department

WHA	wildlife habitat area
WHO	World Health Organization
WIA	Wyoming Infrastructure Authority
WRAP	Water Resources Allocation Program; Western Regional Air Partnership
WRCC	Western Regional Climate Center
WREZ	Western Renewable Energy Zones
WRRI	Water Resources Research Institute
WSA	Wilderness Study Area
WSC	wildlife species of special concern
WSMR	White Sands Missile Range
WSR	Wild and Scenic River
WSRA	Wild and Scenic Rivers Act of 1968
WWII	World War II
WWP	Western Watersheds Project
YPG	Yuma Proving Ground
ZITA	zone identification and technical analysis
ZLD	zero liquid discharge

CHEMICALS

CH_4	methane	NO_2	nitrogen dioxide
CO	carbon monoxide	NO_x	nitrogen oxides
CO_2	carbon dioxide		
		O_3	ozone
H_2S	hydrogen sulfide		
Hg	mercury	Pb	lead
N_2O	nitrous oxide	SF_6	sulfur hexafluoride
NH_3	ammonia	SO_2	sulfur dioxide
		SO_x	sulfur oxides

UNITS OF MEASURE

ac-ft	acre-foot (feet)	dBA	A-weighted decibel(s)
bhp	brake horsepower		
		°F	degree(s) Fahrenheit
°C	degree(s) Celsius	ft	foot (feet)
cf	cubic foot (feet)	ft^2	square foot (feet)
cfs	cubic foot (feet) per second	ft^3	cubic foot (feet)
cm	centimeter(s)		
		g	gram(s)
dB	decibel(s)	gal	gallon(s)

GJ	gigajoule(s)
gpcd	gallon per capita per day
gpd	gallon(s) per day
gpm	gallon(s) per minute
GW	gigawatt(s)
GWh	gigawatt hour(s)
GWh/yr	gigawatt hour(s) per year
h	hour(s)
ha	hectare(s)
Hz	hertz
in.	inch(es)
J	joule(s)
K	degree(s) Kelvin
kcal	kilocalorie(s)
kg	kilogram(s)
kHz	kilohertz
km	kilometer(s)
km^2	square kilometer(s)
kPa	kilopascal(s)
kV	kilovolt(s)
kVA	kilovolt-ampere(s)
kW	kilowatt(s)
kWh	kilowatt-hour(s)
kWp	kilowatt peak
L	liter(s)
lb	pound(s)
m	meter(s)
m^2	square meter(s)
m^3	cubic meter(s)
mg	milligram(s)
Mgal	million gallons
mi	mile(s)
mi^2	square mile(s)
min	minute(s)
mm	millimeter(s)
MMt	million metric ton(s)
MPa	megapascal(s)
mph	mile(s) per hour
MVA	megavolt-ampere(s)
MW	megawatt(s)
MWe	megawatt(s) electric
MWh	megawatt-hour(s)
ppm	part(s) per million
psi	pound(s) per square inch
psia	pound(s) per square inch absolute
rpm	rotation(s) per minute
s	second(s)
scf	standard cubic foot (feet)
TWh	terawatt hour(s)
VdB	vibration velocity decibel(s)
W	watt(s)
yd^2	square yard(s)
yd^3	cubic yard(s)
yr	year(s)
µg	microgram(s)
µm	micrometer(s)

11 UPDATE TO AFFECTED ENVIRONMENT AND IMPACT ASSESSMENT FOR PROPOSED SOLAR ENERGY ZONES IN NEVADA

The U.S. Department of the Interior Bureau of Land Management (BLM) has carried 17 solar energy zones (SEZs) forward for analysis in this Final Solar Programmatic Environmental Impact Statement (PEIS). These SEZs total approximately 285,000 acres (1,153 km^2) of land potentially available for development. This chapter includes analyses of potential environmental impacts for the proposed SEZs in Nevada—Amargosa, Dry Lake, Dry Lake Valley North, Gold Point, and Millers—as well as summaries of the previously proposed Delamar Valley and East Mormon Mountain SEZs and why they were eliminated from further consideration. The SEZ-specific analyses provide documentation from which the BLM will tier future project authorizations, thereby limiting the required scope and effort of project-specific National Environmental Policy Act of 1969 (NEPA) analyses.

The BLM is committed to collecting additional SEZ-specific resource data and conducting additional analysis in order to more efficiently facilitate future development in SEZs. The BLM developed action plans for each of the 17 SEZs carried forward as part of the Supplement to the Draft Solar PEIS (BLM and DOE 2011). These action plans described additional data that could be collected for individual SEZs and proposed data sources and methods for the collection of those data. Work is underway to collect additional data as specified under these action plans (e.g., additional data collection to support evaluation of cultural, visual, and water resources has begun). As the data become available, they will be posted on the project Web site (http://solareis.anl.gov) for use by applicants and the BLM and other agency staff.

To accommodate the flexibility described in the BLM's program objectives and in light of anticipated changes in technologies and environmental conditions over time, the BLM has removed some of the prescriptive SEZ-specific design features presented in the Draft Solar PEIS (BLM and DOE 2010) and the Supplement to the Draft (e.g., height restrictions on technologies used to address visual resource impacts). Alternatively, the BLM will give full consideration to any outstanding conflicts in SEZs as part of the competitive process being developed through rulemaking (see Section 2.2.2.2.1).

In preparing selected parcels for competitive offer, the BLM will review all existing analysis for an SEZ and consider any new or changed circumstances that may affect the development of the SEZ. The BLM will also work with appropriate federal, state, and local agencies, and affected tribes, as necessary, to discuss SEZ-related issues. This work would ultimately inform how a parcel would be offered competitively (e.g., parcel size and configuration, technology limitations, mitigation requirements, and parcel-specific competitive process). Prior to issuing a notice of competitive offer, the BLM would complete appropriate NEPA analysis to support the offer. This analysis would tier to the analysis for SEZs in the Solar PEIS to the extent practicable.

It is the BLM's goal to compile all data, information, and analyses for SEZs from the Draft Solar PEIS, the Supplement to the Draft, and this Final Solar PEIS into a single location

accessible via the project Web site (http://solareis.anl.gov) for ease of use by applicants and the BLM and other agency staff.

This chapter is an update to the information on Nevada SEZs presented in the Draft Solar PEIS. As stated previously, the Delamar Valley and East Mormon SEZs were dropped from further consideration through the Supplement to the Draft Solar PEIS. For the remaining five Nevada SEZs—Amargosa, Dry Lake, Dry Lake Valley North, Gold Point, and Millers—the information presented in this chapter supplements and updates, but does not replace, the information provided in the corresponding Chapter 11 on proposed SEZs in Nevada in the Draft Solar PEIS. Corrections to incorrect information in Sections 11.1, 11.3, 11.4, 11.6, and 11.7 of the Draft Solar PEIS and in Sections C.4.1, C.4.2, C.4.3, C.4.4, and C.4.5 of the Supplement to the Draft are provided in Sections 11.1.26, 11.3.26, 11.4.26, 11.6.26, and 11.7.26 of this Final Solar PEIS.

11.7 MILLERS

11.7.1 Background and Summary of Impacts

11.7.1.1 General Information

The proposed Millers SEZ is located in Esmeralda County in southern Nevada, 44 mi (71 km) east of the California border. In 2008, the county population was 664, while adjacent Nye County to the west had a population of 44,175. The nearest town is Tonopah, Nevada, about 15 mi (24 km) west in Nye County, with a population of approximately 1,500. The NTTR is 30 mi (48 km) northeast of the SEZ. As of October 28, 2011, there were no pending solar applications within or adjacent to the SEZ.

The nearest major road access to the proposed SEZ is via U.S. 95/U.S. 6, which runs east–west along its southern border. The nearest railroad stop is 90 mi (145 km) away in Thorne, which is the end of a spur from the main line of the UP Railroad. Tonopah Airport, a small county airport 23 mi (37 km) to the east of the SEZ, and three public airports managed by the BLM serve the area, although none has scheduled commercial passenger service or regular freight service.

As published in the Draft Solar PEIS (BLM and DOE 2010), the proposed Millers SEZ had a total area of 16,787 acres (66.9 km^2). In the Supplement to the Draft Solar PEIS (BLM and DOE 2011), no boundary revisions were identified for the proposed SEZ (see Figure 11.7.1.1-1). However, areas specified for non-development were mapped, where data were available. For the proposed Millers SEZ, Ione Wash and a small wetland area in the southern portion of the SEZ, totaling 253 acres (1.0 km^2), were identified as non-development areas (see Figure 11.7.1.1-2). The remaining developable area within the SEZ is 16,534 acres (66.9 km^2).

The analyses in the following sections update the affected environment and potential environmental, cultural, and socioeconomic impacts associated with utility-scale solar energy development in the Millers SEZ as described in the Draft Solar PEIS.

11.7.1.2 Development Assumptions for the Impact Analysis

Maximum solar development of the Millers SEZ is assumed to be 80% of the SEZ area over a period of 20 years, a maximum of 13,227 acres (54 km^2) (Table 11.7.1.2-1). Full development of the Millers SEZ would allow development of facilities with an estimated total of between 1,470 MW (power tower, dish engine, or PV technologies, 9 acres/MW [0.04 km^2/MW]) and 2,645 MW (solar trough technologies, 5 acres/MW [0.02 km^2/MW]) of electrical power capacity.

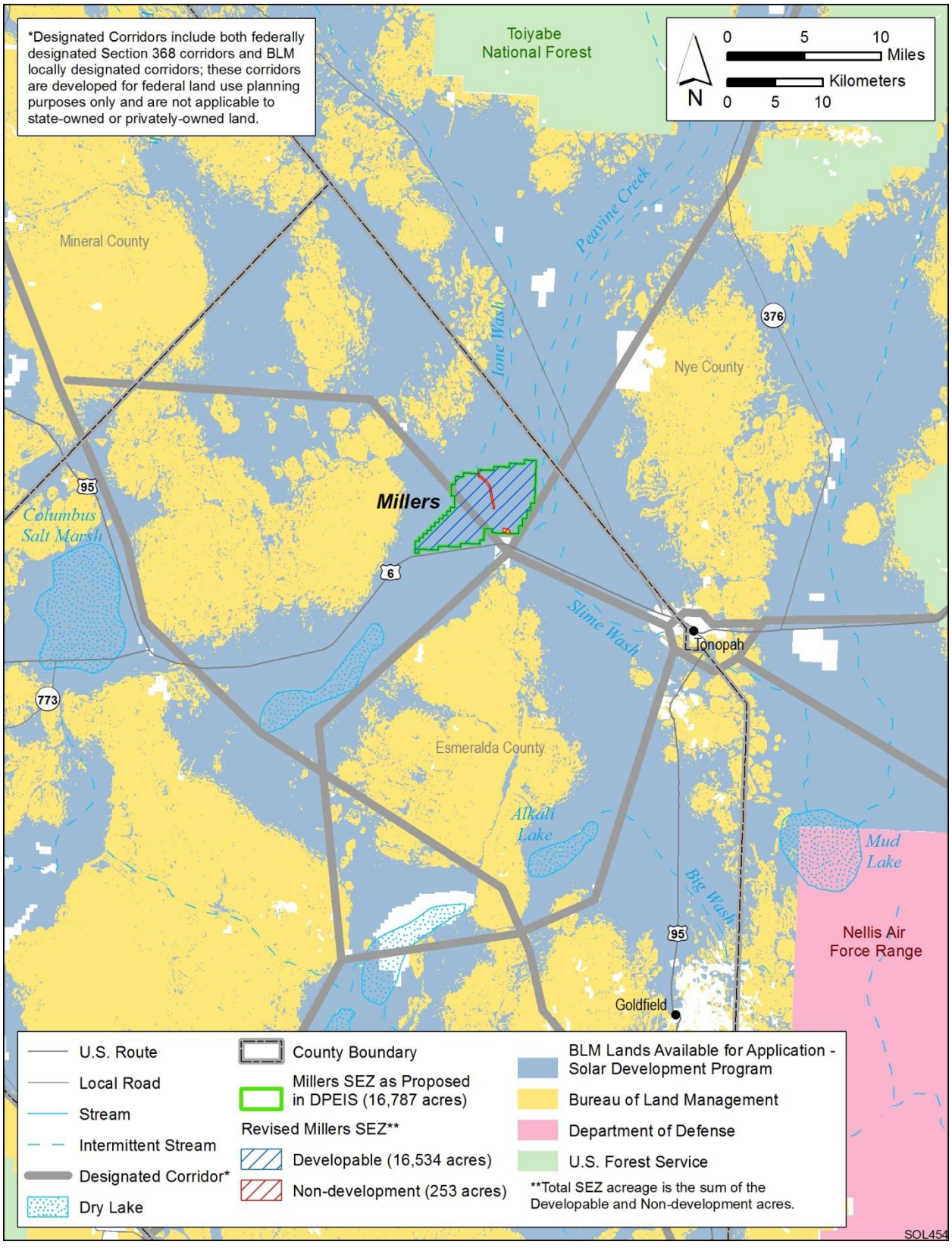

FIGURE 11.7.1.1-1 Proposed Millers SEZ as Revised

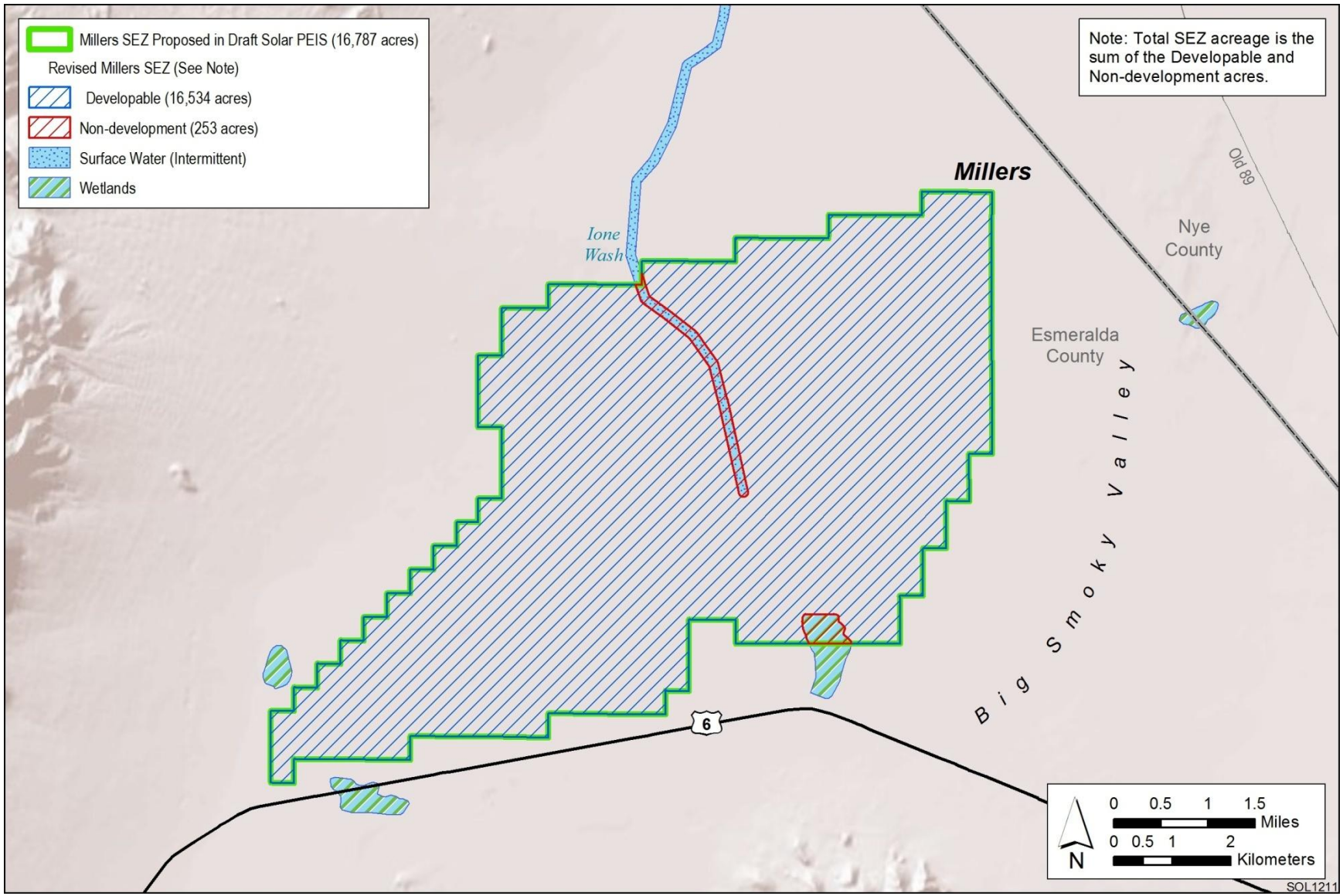

FIGURE 11.7.1.1-2 Developable and Non-development Areas for the Proposed Millers SEZ as Revised

TABLE 11.7.1.2-1 Assumed Development Acreages, Solar MW Output, and Nearest Major Access Road and Transmission Line for the Proposed Millers SEZ as Revised

Total Developable Acreage and Assumed Developed Acreage (80% of Total)	Assumed Maximum SEZ Output for Various Solar Technologies	Distance to Nearest State, U.S., or Interstate Highway	Distance and Capacity of Nearest Existing Transmission Line	Area of Assumed Road ROW	Distance to Nearest Designated Corridor[f]
16,534 acres[a] and 13,227 acres	1,470 MW[b] 2,645 MW[c]	U.S. 95/U.S. 6 adjacent	0 mi[d] 120 kV	NA[e]	Adjacent

[a] To convert acres to km^2, multiply by 0.004047.

[b] Maximum power output if the SEZ were fully developed using power tower, dish engine, or PV technologies, assuming 9 acres/MW (0.04 km^2/MW) of land required.

[c] Maximum power output if the SEZ were fully developed using solar trough technologies, assuming 5 acres/MW (0.02 km^2/MW) of land required.

[d] To convert mi to km, multiply by 1.6093.

[e] NA = no access road construction is assumed necessary for the SEZ.

[f] BLM-designated corridors are developed for federal land use planning purposes only and are not applicable to state-owned or privately owned land.

Availability of transmission from SEZs to load centers will be an important consideration for future development in SEZs. For the proposed Millers SEZ, the nearest existing transmission line as identified in the Draft Solar PEIS is a 120-kV line that runs through the SEZ. It is possible that this existing line could be used to provide access from the SEZ to the transmission grid, but the 120-kV capacity of the line would not be adequate for the possible 1,470 to 2,645 MW of new capacity. Therefore, at full build-out capacity, new transmission and/or upgrades of existing transmission lines would be required to bring electricity from the proposed Millers SEZ to load centers. An assessment of the most likely load center destinations for power generated at the Millers SEZ and a general assessment of the impacts of constructing and operating new transmission facilities to those load centers are provided in Section 11.7.23. In addition, the generic impacts of transmission and associated infrastructure construction and of line upgrades for various resources are discussed in Chapter 5 of this Final Solar PEIS. Project-specific analyses would be required to identify the specific impacts of new transmission construction and line upgrades for any projects proposed within the SEZ.

For the proposed Millers SEZ, U.S. 95/U.S. 6 runs from east to west along the southern border of the SEZ. Existing road access to the proposed Millers SEZ should be adequate to support construction and operation of solar facilities. No additional road construction outside of the SEZ was assumed to be required to support solar development.

The Millers SEZ partially overlaps a locally designated transmission corridor. For this impact assessment, it is assumed that up to 80% of the proposed SEZ could be developed. This

does not take into account the potential limitations to solar development that may result from siting constraints associated with the corridor. The development of solar facilities and the existing corridor will be dealt with by the BLM on a case-by-case basis; see Section 11.7.2.2 on impacts on lands and realty for further discussion.

11.7.1.3 Programmatic and SEZ-Specific Design Features

The proposed programmatic design features for each resource area to be required under the BLM Solar Energy Program are presented in Section A.2.2 of Appendix A of this Final Solar PEIS. These programmatic design features are intended to avoid, minimize, and/or mitigate adverse impacts from solar energy development and will be required for development on all BLM-administered lands including SEZ and non-SEZ lands.

The discussions below addressing potential impacts of solar energy development on specific resource areas (Sections 11.7.2 through 11.7.22) also provide an assessment of the effectiveness of the programmatic design features in mitigating adverse impacts from solar development within the SEZ. SEZ-specific design features to address impacts specific to the proposed Millers SEZ may be required in addition to the programmatic design features. The proposed SEZ-specific design features for the Millers SEZ have been updated on the basis of revisions to the SEZ since the Draft Solar PEIS (such as the identification of non-development areas) and on the basis of comments received on the Draft Solar PEIS and Supplement to the Draft. All applicable SEZ-specific design features identified to date (including those from the Draft Solar PEIS that are still applicable) are presented in Sections 11.7.2 through 11.7.22.

11.7.2 Lands and Realty

11.7.2.1 Affected Environment

The exterior boundary of the proposed SEZ remains the same as that in the Draft Solar PEIS. Within the boundary of the proposed Millers SEZ, about 253 acres (1.0 km^2) along Ione Wash and a small wetland area have been designated as non-development areas, leaving a total developable area within the SEZ of 16,534 acres (66.9 km^2). Since the Draft Solar PEIS was published, the BLM has authorized a solar energy development ROW for a facility utilizing power tower technology about 3.2 mi (5 km) east of the proposed SEZ.

11.7.2.2 Impacts

The description of impacts in the Draft Solar PEIS remains the same with the exception of the classification of land along Ione Wash and the small wetland as non-development areas. In addition, with the approval of the solar facility east of the SEZ, solar development within the SEZ would no longer be unique in the immediate area and would present less of a discordant appearance. The major impact of the proposed SEZ on lands and realty activities remains: it

would establish a large industrial area that would exclude many existing and potential uses of the land.

The proposed Millers SEZ partially overlaps a locally designated transmission corridor. This existing corridor will be used primarily for the siting of transmission lines and other infrastructure such as pipelines. The existing corridor will be the preferred location for any transmission development that is required to support solar development and future transmission grid improvements related to the build-out of the Millers SEZ. Any use of the corridor lands within the Millers SEZ for solar energy facilities, such as solar panels or heliostats, must be compatible with the future use of the existing corridor. The BLM will assess solar projects in the vicinity of the existing corridor on a case-by-case basis. The BLM will review and approve individual project plans of development to ensure compatible development that maintains the use of the corridor.

11.7.2.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on lands and realty are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the programmatic design features will provide some mitigation for the identified impacts but will not mitigate all adverse impacts. For example, impacts related to the exclusion of many existing and potential uses of the public land, the visual impact of an industrial-type solar facility within an otherwise rural area, and induced land use changes, if any, on nearby or adjacent state and private lands may not be fully mitigated

No SEZ-specific design features to address impacts on lands and realty in the proposed Millers SEZ have been identified through this Final Solar PEIS. Some SEZ-specific design features may be established for parcels within the Millers SEZ through the process of preparing parcels for competitive offer and subsequent project-specific analysis..

11.7.3 Specially Designated Areas and Lands with Wilderness Characteristics

11.7.3.1 Affected Environment

There are no specially designated areas or lands with wilderness characteristics within 25 mi (40 km) of the SEZ. The description in the Draft Solar PEIS is still valid.

11.7.3.2 Impacts

Because there are no affected resources within 25 mi (40 km) of the SEZ, no impacts have been identified.

11.7.3.3 SEZ-Specific Design Features and Design Feature Effectiveness

Since there are no specially designated areas or lands with wilderness characteristics within 25 mi (40 km) of the SEZ, no SEZ-specific design features to address impacts on such areas are required for the proposed Millers SEZ.

11.7.4 Rangeland Resources

11.7.4.1 Livestock Grazing

11.7.4.1.1 Affected Environment

The proposed SEZ contains a small percentage of one livestock grazing allotment, and the description in the Draft Solar PEIS remains valid.

11.7.4.1.2 Impacts

Grazing would be excluded from areas of the SEZ developed for solar energy production. The SEZ includes about 4% of the Magruder grazing allotment. If all of the SEZ were developed, it is anticipated that there would be only a minimal impact on the overall grazing operation. It is likely that because of the large size of the allotment, any losses associated with development of the SEZ would be absorbed elsewhere within the allotment.

11.7.4.1.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on livestock grazing are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the programmatic design features will provide some mitigation for any identified impacts.

On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, no SEZ-specific design features to address impacts on livestock grazing have been identified. Some SEZ-specific design features may be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

11.7.4.2 Wild Horses and Burros

11.7.4.2.1 Affected Environment

As presented in Section 11.7.4.2.1 of the Draft Solar PEIS, no wild horse or burro HMAs occur within the proposed Millers SEZ or in close proximity to it.

11.7.4.2.2 Impacts

As presented in the Draft Solar PEIS, solar energy development within the proposed Millers SEZ would not directly affect wild horses and burros.

11.7.4.2.3 SEZ-Specific Design Features and Design Feature Effectiveness

Because solar energy development within the proposed Millers SEZ would not affect wild horses and burros, no SEZ-specific design features to address wild horses and burros have been identified in this Final Solar PEIS.

11.7.5 Recreation

11.7.5.1 Affected Environment

The description of the area within and around the proposed Millers SEZ in the Draft Solar PEIS remains valid. The overall appearance of the site is uniform and somewhat monotonous, and it is believed that the area receives no significant recreational use.

11.7.5.2 Impacts

Recreational use would be eliminated from portions of the SEZ developed for solar energy production. The level of recreational use in the area is thought to be low, and the impact on recreational use is anticipated to be minimal. The exception to this would be the presence within the SEZ of a portion of the route for the Las Vegas to Reno OHV race; this portion would be closed. It is anticipated that the race course would be rerouted around the SEZ to avoid the economic and recreational loss that would occur if this was not done.

In addition, lands that are outside of the proposed SEZ may be acquired or managed for mitigation of impacts on other resources (e.g., sensitive species). Managing these lands for mitigation could further exclude or restrict recreational use, potentially leading to additional losses in recreational opportunities in the region. The impact of acquisition and management of mitigation lands would be considered as a part of the environmental analysis of specific solar energy projects.

11.7.5.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on recreational resources are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the programmatic design features will provide adequate mitigation for most of the identified impacts with the exception of the potential impact on desert racing.

On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, the following SEZ-specific design feature for the Millers SEZ has been identified:

- Alternative routes for the Las Vegas–Reno race should be considered consistent with local land use plan requirements.

The need for additional SEZ-specific design features will be identified through the process of preparing parcels for competitive offer and subsequent project specific analysis.

11.7.6 Military and Civilian Aviation

11.7.6.1 Affected Environment

The description in the Draft Solar PEIS remains valid. Approximately the eastern two-thirds of the proposed Millers SEZ is covered by MTRs, with 50- and 100-ft (15- and 30-m) AGL operating limits. The area is located about 26 mi (42 km) northwest of the boundary of the NTTR. The closest civilian aviation facility is the Tonopah Municipal Airport, which is located about 20 mi (32 km) southeast of the SEZ.

11.7.6.2 Impacts

Impacts described in the Draft Solar PEIS remain valid and have been updated with additional input from the DoD. Impacts include the following:

- Solar development could encroach into MTR airspace that crosses the SEZ; structures higher than 50 ft (15 m) AGL may present unacceptable electromagnetic compatibility concerns for the NTTR test mission.

- Light from solar facilities could affect DoD nighttime operations.

Through comments on the Draft Solar PEIS and the Supplement to the Draft, the DoD expressed concern for solar energy facilities that might affect military test and training operations. The DoD requested that the technology at the proposed Millers SEZ be restricted to low-profile, low-glare PV technologies under 50 ft (15 m) AGL, similar to the PV I Array at Nellis Air Force Base.

11.7.6.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on military and civilian aviation are described in Section A.2.2 of Appendix A of this Final Solar PEIS. The

programmatic design features require early coordination with the DoD to identify and avoid, minimize, and/or mitigate, if possible, potential impacts on the use of military airspace.

No SEZ-specific design features to address impacts on military and civilian aviation for the Millers SEZ have been identified in this Final Solar PEIS. Some SEZ-specific design features may be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

11.7.7 Geologic Setting and Soil Resources

11.7.7.1 Affected Environment

11.7.7.1.1 Geologic Setting

Data provided in the Draft Solar PEIS remain valid. The boundaries of the proposed SEZ remain the same, but about 253 acres (1.0 km^2) of non-development areas have now been identified. Non-development areas include Ione Wash and a small wetland area in the southern portion of the SEZ.

11.7.7.1.2 Soil Resources

Data provided in the Draft Solar PEIS remain valid, with the following update:

- Soil unit coverage at the proposed Millers SEZ as revised is summarized in Table 11.7.7.1-1, which provides revised areas for soil map units taking into account non-development areas.

11.7.7.2 Impacts

Impacts on soil resources would occur mainly as a result of ground-disturbing activities (e.g., grading, excavating, and drilling), especially during the construction phase of a solar project. Because the developable area of the SEZ has changed by less than 5%, the assessment of impacts provided in the Draft Solar PEIS remains valid, with the following updates:

- Impacts related to wind erodibility are somewhat reduced because the identification of non-development areas eliminates 224 acres (0.91 km^2) of moderately erodible soils and 28 acres (0.11 km^2) of highly erodible soils (Yomba-Wardenot-Izo and Yomba-Kawich associations) from development.

TABLE 11.7.7.1-1 Summary of Soil Map Units within the Proposed Millers SEZ as Revised

Map Unit Symbol[a]	Map Unit Name	Erosion Potential		Description	Area, in Acres[d] (percentage of SEZ)
		Water[b]	Wind[c]		
162	Yomba–Playas–Youngston association, alkali	Low	Moderate (WEG 4L)[e]	Consists of about 40% Yomba gravelly sand and 25% Playas (silty clay loam). Level to moderately sloping soils on alluvial flats, playas, and drainageways. Parent material is alluvium from mixed sources. Very deep and very poorly (Playas) to somewhat excessively drained, with moderate surface runoff potential and moderately slow to slow permeability. Available water capacity is very low (Playas) to low. Severe rutting hazard. Used mainly for livestock grazing and wildlife habitat.	4,068 (24.2)[f]
131	Belcher–Playas–Yomba association	Low	High (WEG 2)	Consists of 45% Belcher gravelly sand, 20% Yomba gravelly fine sandy loam, and 20% Playas (silty clay loam). Level to nearly level soils on alluvial flats and playas. Parent material is alluvium from mixed sources. Shallow to a duripan (Belcher) and very deep and very poorly (Playas) to somewhat excessively drained, with high surface-runoff potential (very slow infiltration rate) and moderate to moderately rapid permeability. Available water capacity is very low to low. Moderate rutting hazard. Used mainly for wildlife grazing, wildlife habitat, and irrigated cropland (alfalfa, corn silage, and small grains).	4,030 (24.0)
160	Yomba–Playas–Youngston association	Low	Moderate (WEG 4L)	Consists of 40% Yomba gravelly sand, 25% Playas (silty clay loam), and 20% Youngston silt loam. Level to moderately sloping soils on alluvial flats, playas, and drainageways. Parent material is alluvium from mixed sources. Very deep and very poorly (Playas) to somewhat excessively drained, with moderate surface-runoff potential and moderately slow to slow permeability. Available water capacity is very low (Playas) to high. Severe rutting hazard. Used mainly for livestock grazing and wildlife habitat.	3,654 (21.8)[g]

TABLE 11.7.7.1-1 (Cont.)

Map Unit Symbol[a]	Map Unit Name	Erosion Potential		Description	Area, in Acres[d] (percentage of SEZ)
		Water[b]	Wind[c]		
163	Yomba–Playas–Kawich association	Moderate	High (WEG 1)	Consists of 30% Yomba gravelly sand, 30% Playas (silty clay loam), and 30% Kawich fine sand. Level to sloping soils on sand sheets (Kawich on stabilized sand dunes), alluvial flats, and playas. Parent material is alluvium from mixed sources and eolian sand. Very deep and very poorly (Playas) to excessively drained, with low surface-runoff potential (high infiltration rate) and moderate to very rapid permeability. Available water capacity is very low (Playas) to low. Moderate rutting hazard. Used mainly for livestock grazing and wildlife habitat.	2,262 (13.5)
161	Yomba–Wardenot–Izo association	Slight	High (WEG 2)	Consists of 45% Yomba gravelly sand, 25% Wardenot gravelly fine sandy loam, and 15% Izo very gravelly sand. Level to sloping soils formed on alluvial flats and fan skirts. Parent material is alluvium from mixed sources. Very deep and somewhat excessively to excessively drained, with moderate surface-runoff potential and moderate to rapid permeability. Available water capacity is very low to low. Moderate rutting hazard. Used mainly for grazing and wildlife habitat.	1,803 (10.7)[h]
164	Yomba–Kawich association	Slight	High (WEG 2)	Consists of 50% Yomba gravelly sand and 35% Kawich fine sand. Level to sloping soils on alluvial flats and fan skirts (Kawich on stabilized sand dunes). Parent material is alluvium from mixed sources. Very deep and somewhat excessively to excessively drained, with low surface-runoff potential (high infiltration rate) and moderate to very rapid permeability. Available water capacity is very low to low. Moderate rutting hazard. Used mainly as livestock grazing and wildlife habitat.	602 (3.6)[i]

TABLE 11.7.7.1-1 (Cont.)

Map Unit Symbol[a]	Map Unit Name	Erosion Potential		Description	Area, in Acres[d] (percentage of SEZ)
		Water[b]	Wind[c]		
180	Youngston–Playas association	Moderate	Moderate (WEG 4L)	Consists of 60% Youngston silt loam and 25% Playas (silty clay loam). Level to nearly level soils on alluvial flats and playas. Parent material is alluvium from mixed sources. Very deep and very poorly (Playas) to well drained, with moderate surface-runoff potential and moderately slow permeability. Available water capacity is very low (Playas) to high. Severe rutting hazard. Used mainly for livestock grazing, wildlife habitat, and irrigated cropland (alfalfa, corn silage, and small grains).	182 (1.1)
430	Slaw–Playas complex	Moderate	Moderate (WEG 4L)	Consists of 45% Slaw loam and 40% Playas (silty clay loam). Level to nearly level soils on alluvial flats and playas. Parent material is alluvium from mixed sources. Very deep and very poorly (Playas) to well drained, with high surface-runoff potential (slow infiltration rate) and slow permeability. Available water capacity is very low (Playas) to high. Severe rutting hazard. Used mainly for livestock grazing and wildlife habitat.	137 (<1)[j]

[a] Map unit symbols are shown in Figure 11.7.7.1-5 of the Draft Solar PEIS.

[b] Water erosion potential rates based on soil erosion factor K, which indicates the susceptibility of soil to sheet and rill erosion by water. Values range from 0.02 to 0.69 and are provided in parentheses under the general rating; a higher value indicates a higher susceptibility to erosion. Estimates are based on the percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity. A rating of "slight" indicates that erosion is unlikely under ordinary climatic conditions. A rating of "moderate" indicates that erosion could be expected under ordinary climatic conditions.

[c] Wind erosion potential here is based on the wind erodibility group (WEG) designation: groups 1 and 2, high; groups 3 through 6, moderate; and groups 7 and 8, low (see footnote d for further explanation).

[d] To convert from acres to km^2, multiply by 0.004047.

Footnotes continued on next page.

TABLE 11.7.7.1-1 (Cont.)

[e] WEGs are based on soil texture, content of organic matter, effervescence of carbonates, content of rock fragments, and mineralogy, and also take into account soil moisture, surface cover, soil surface roughness, wind velocity and direction, and the length of unsheltered distance (USDA 2004). Groups range in value from 1 (most susceptible to wind erosion) to 8 (least susceptible to wind erosion). The NRCS provides a wind erodibility index, expressed as an erosion rate in tons per acre per year, for each of the wind erodibility groups: WEG 1, 220 tons (200 metric tons) per acre (4,000 m^2) per year (average); WEG 2, 134 tons (122 metric tons) per acre (4,000 m^2) per year; WEGs 3 and 4 (and 4L), 86 tons (78 metric tons) per acre (4,000 m^2) per year; WEG 5, 56 tons (51 metric tons) per acre (4,000 m^2) per year; WEG 6, 48 tons (44 metric tons) per acre (4,000 m^2) per year; WEG 7, 38 tons (34 metric tons) per acre (4,000 m^2) per year; and WEG 8, 0 tons (0 metric tons) per acre (4,000 m^2) per year.

[f] A total of 24 acres (0.097 km^2) within the Yomba–Playas–Youngston association, alkali is currently categorized as a non-development area.

[g] A total of 142 acres (0.57 km^2) within the Yomba–Playas–Youngston association is currently categorized as a non-development area.

[h] A total of 2 acres (0.0081 km^2) within the Yomba–Wardenot–Izo association is currently categorized as a non-development area.

[i] A total of 26 acres (0.11 km^2) within the Yomba–Kawich association is currently categorized as a non-development area.

[j] A total of 58 acres (0.23 km^2) within the Slaw–Playas association is currently categorized as a non-development area.

Source: NRCS (2010).

1

- Impacts related to water erodibility are somewhat reduced because the identification of non-development areas eliminates 58 acres (0.23 km^2) of moderately erodible soils from development.

11.7.7.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on soils are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the programmatic design features will reduce the potential for soil impacts during all project phases.

On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, no SEZ-specific design features for soil resources were identified at the proposed Millers SEZ. Some SEZ-specific design features may be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

11.7.8 Minerals (Fluids, Solids, and Geothermal Resources)

A mineral potential assessment for the proposed Millers SEZ has been prepared and reviewed by BLM mineral specialists knowledgeable about the region where the SEZ is located (BLM 2012). The BLM is proposing to withdraw the SEZ from settlement, sale, location, or entry under the general land laws, including the mining laws, for a period of 20 years (see Section 2.2.2.2.4 of the Final Solar PEIS). The potential impacts of this withdrawal are discussed in Section 11.7.24.

11.7.8.1 Affected Environment

The description in the Draft Solar PEIS remains valid. There are no locatable mining claims, no active oil and gas leases, and no active or historical geothermal developments in or near the Millers SEZ.

11.7.8.2 Impacts

There are no identified conflicts with mineral resources present. The description of the proposed SEZ in the Draft Solar PEIS is still accurate. If identified as an SEZ, it would continue to be closed to all incompatible forms of mineral development. Some future development of oil and gas resources beneath the SEZ would be possible, and production of common minerals could take place in areas not directly developed for solar energy production.

11.7.8.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on mineral resources are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the programmatic design features will provide adequate protection of mineral resources.

On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, no SEZ-specific design features for mineral resources have been identified in this Final Solar PEIS. Some SEZ-specific design features may be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

11.7.9 Water Resources

11.7.9.1 Affected Environment

The description of the affected environment given in the Draft Solar PEIS relevant to water resources at the proposed Millers SEZ remains valid and is summarized in the following paragraphs.

The Millers SEZ is within the Central Nevada Desert subbasin of the Great Basin hydrologic region. The SEZ is located in the southern half of the Big Smokey Valley known as "Tonopah Flat." The average precipitation is 5 in./yr (13 cm/yr); average snowfall is 13 in./yr (33 cm/yr); and evapotranspiration rates have been estimated to be approximately 58 in./yr (147 cm/yr). There are no perennial surface water features in the proposed Millers SEZ. Intermittent stream channels of Peavine Creek and Ione Wash flow in a southwestern direction across the SEZ toward the dry lake areas in the southwestern portion of Big Smoky Valley. Approximately 2,200 acres (9 km^2) of the northwestern portion of the SEZ is located in the base of an alluvial fan containing several distributary intermittent/ephemeral stream channels. Wetlands near the proposed SEZ are generally less than 200 acres (0.8 km^2), and there are no significant wetlands within the area. Flood hazards have not been identified for the SEZ area but have been mapped for the adjacent Nye County, indicating that the braided intermittent channels of Peavine Creek and Ione Wash would likely be within a 100-year floodplain. A total of 253 acres (1 km^2) associated with the Ione Wash channel in the SEZ has been identified as a non-development area. The proposed Millers SEZ is located within the Big Smokey Valley–Tonopath Flat groundwater basin, which covers an area of 1,025,900 acres (4,152 km^2), with groundwater primarily in the basin-fill aquifer, which consists of lenses of gravels, sands, and clays that are typically 1,500 to 2,500 ft (457 to 762 m) thick near the SEZ. Groundwater recharge in the basin has been estimated to range from 2,807 to 4,060 ac-ft/yr (3.5 million to 5.0 million m^3/yr), and groundwater generally flows from northeast to southwest. Depth to groundwater ranges from 8 to 78 ft (2 to 24 m) in the vicinity of the SEZ, and the quality of the groundwater generally meets drinking water standards.

All waters in Nevada are public property, and the NDWR is the agency responsible for managing both surface and groundwater resources. Approximately 1,300 acres (5.3 km^2) of the proposed SEZ falls under State Engineer's Order 828 (NDWR 1983), which designates municipal and domestic water uses as the preferred beneficial use in the Tonapah Flat groundwater basin. The annual yield of the Tonapah Flat groundwater basin is set at 6,000 ac-ft/yr (7.4 million m^3/yr); water rights in the basin are over-appropriated, with a total 23,930 ac-ft/yr (29.5 million m^3/yr) allotted for primarily mining and irrigation (NDWR 2012). Solar energy developers would have to submit applications for new groundwater withdrawals or transfer of existing water rights under the review of the NDWR.

In addition to the water resources information provided in the Draft Solar PEIS, this section provides a planning-level inventory of available climate, surface water, and groundwater monitoring stations within the immediate vicinity of the Millers SEZ and surrounding basin. Additional data regarding climate, surface water, and groundwater conditions are presented in Tables 11.7.9.1-1 through 11.7.9.1-7 and in Figures 11.7.9.1-1 and 11.7.9.1-2. Fieldwork and hydrologic analyses needed to determine 100-year floodplains and jurisdictional water bodies would need to be coordinated with appropriate federal, state, and local agencies. Areas within the Millers SEZ that are found to be within a 100-year floodplain will be identified as non-development areas. Any water features within the Millers SEZ determined to be jurisdictional will be subject to the permitting process described in the CWA.

11.7.9.2 Impacts

11.7.9.2.1 Land Disturbance Impacts on Water Resources

The discussion of land disturbance effects on water resources in the Draft Solar PEIS remains valid. As stated in the Draft Solar PEIS, land disturbance impacts in the vicinity of the

TABLE 11.7.9.1-1 Watershed and Water Management Basin Information Relevant to the Proposed Millers SEZ as Revised

Basin	Name	Area (acres)[b]
Subregion (HUC4)[a]	Central Nevada Desert Basins (1606)	30,541,692
Cataloging unit (HUC8)	Southern Big Smoky Valley (16060003)	1,312,034
Groundwater basin	Big Smokey Valley, Tonopah Flat	1,025,920
SEZ	Millers	16,787

[a] HUC = Hydrologic Unit Code; a USGS system for characterizing nested watersheds that includes large-scale subregions (HUC4) and small-scale cataloging units (HUC8).

[b] To convert acres to km^2, multiply by 0.004047.

TABLE 11.7.9.1-2 Climate Station Information Relevant to the Proposed Millers SEZ as Revised

Climate Station (COOP ID[a])	Elevation[b] (ft)[c]	Distance to SEZ (mi)[d]	Period of Record	Mean Annual Precipitation (in.)[e]	Mean Annual Snowfall (in.)
Coaldale Junction, Nevada (261755)	4,603	24	1941–1970	3.35	7.70
Goldfield, Nevada (263285)	5,690	35	1906–2009	6.06	17.80
Mina, Nevada (265168)	4,550	36	1896–2011	4.51	7.20
Tonopah AP, Nevada (268170)	5,426	22	1954–2011	5.06	13.00

[a] National Weather Service's Cooperative Station Network station identification code.

[b] Surface elevations for the proposed Millers SEZ range from 4,775 to 4,865 ft.

[c] To convert ft to m, multiply by 0.3048.

[d] To convert mi to km, multiply by 1.6093.

[e] To convert in. to cm, multiply by 2.540.

Source: NOAA (2012).

TABLE 11.7.9.1-3 Total Lengths of Selected Streams at the Subregion, Cataloging Unit, and SEZ Scale Relevant to the Proposed Millers SEZ as Revised

Water Feature	Subregion, HUC4 (ft)[a]	Cataloging Unit, HUC8 (ft)	SEZ (ft)
Unclassified streams	87,719	0	0
Perennial streams	10,923,723	218,469	0
Intermittent/ephemeral streams	724,309,083	36,535,020	93,077
Canals	4,035,992	138,426	0

[a] To convert ft to m, multiply by 0.3048.

Source: USGS (2012b).

proposed Millers SEZ could potentially affect drainage patterns, intermittent/ephemeral flows in Ione Wash and Peavine Creek, along with groundwater recharge and discharge properties. The alteration of natural drainage pathways during construction can lead to impacts related to flooding, loss of water delivery to downstream regions, and alterations to riparian vegetation and habitats. The identification of non-development areas associated with Ione Wash was done by using low-resolution data from the National Hydrography Dataset (USGS 2012a), which did not completely capture the braided channels of Ione Wash as shown in Figure 11.7.9.1-1 of this Final Solar PEIS.

TABLE 11.7.9.1-4 Stream Discharge Information Relevant to the Proposed Millers SEZ as Revised

Parameter	Station (USGS ID)	
	Big Smoky Valley Tributary near Blair Junction, Nevada (10249680)	Big Smoky Valley Tributary near Tonopah, Nevada (10249620)
Period of record	1961–1989	1961–1985
No. of observations	23	25
Discharge, median (ft^3/s)[a]	0	0.7
Discharge, range (ft^3/s)	0–10	0–460
Discharge, most recent observation (ft^3/s)	0	460
Distance to SEZ (mi)[b]	16	17

[a] To convert ft^3 to m^3, multiply by 0.0283.

[b] To convert mi to km, multiply by 1.6093.

Source: USGS (2012b).

TABLE 11.7.9.1-5 Surface Water Quality Data Relevant to the Proposed Millers SEZ as Revised[a]

Station (USGS ID)	Period of Record	No. of Records
No water quality data are available for surface water stations in the SEZ's HUC8 watershed.	NA[a]	NA

[a] NA = no data collected for this parameter.

Source: USGS (2012b).

Land clearing, land leveling, and vegetation removal during the development of the SEZ have the potential to disrupt intermittent/ephemeral stream channels. Several programmatic design features described in Section A.2.2 of Appendix A of this Final Solar PEIS would avoid, minimize, and/or mitigate impacts associated with the disruption of intermittent/ephemeral water features. Additional analyses of intermittent/ephemeral streams are presented in this update, including an evaluation of functional aspects of stream channels with respect to groundwater recharge, flood conveyance, sediment transport, geomorphology, and ecological habitats. Only a summary of the results from these surface water analyses is presented in this section; more information on methods and results is presented in Appendix O.

TABLE 11.7.9.1-6 Water Quality Data from Groundwater Samples Relevant to the Proposed Millers SEZ as Revised

Parameter	Station (USGS ID)[a] 383220117034000	382328117262501
Period of record	1967–1967	2003–2003
No. of records	2	2
Temperature (°C)[b]	9.5 (9.5–9.5)	19.8 (19.5–20.1)
Total dissolved solids (mg/L)	NA[c]	362.5 (361–364)
Dissolved oxygen (mg/L)	NA	6.45 (6–6.9)
pH	NA	7.6 (7.5–7.7)
Nitrate (mg/L as N)	0.86	2.745 (2.73–2.76)
Phosphate (mg/L)	< 0.010	0.043 (0.031–< 0.055)
Organic carbon (mg/L)	NA	NA
Calcium (mg/L)	123	NA
Magnesium (mg/L)	18	NA
Sodium (mg/L)	26	NA
Chloride (mg/L)	13	NA
Sulfate (mg/L)	202	NA
Arsenic (µg/L)	0	NA

[a] Median values are listed; the range in values is shown in parentheses.

[b] To convert °C to °F, multiply by 1.8, then add 32.

[c] NA = no data collected for this parameter.

Source: USGS (2012b).

The study region considered for the intermittent/ephemeral stream evaluation relevant to the Millers SEZ is a subset of the Southern Big Smoky Valley watershed (HUC8), for which information regarding stream channels is presented in Tables 11.7.9.1-3 and 11.7.9.1-4 of this Final Solar PEIS. The results of the intermittent/ephemeral stream evaluation are shown in Figure 11.7.9.2-1, which depicts flow lines from the National Hydrography Dataset (USGS 2012a) labeled as low, moderate, and high sensitivity to land disturbance. Within the study area, 16% of the intermittent/ephemeral stream channels had low sensitivity, 76% had moderate sensitivity, and 8% had high sensitivity to land disturbance. The intermittent/ephemeral stream channels associated with the alluvial fan feature in the northwest portion of the SEZ were identified as having a moderate sensitivity, while the intermittent reaches of Ione Wash and Peavine Creek within the SEZ were primarily identified as having low sensitivity to land disturbance (Figure 11.7.9.2-1).

11.7.9.2.2 Water Use Requirements for Solar Energy Technologies

The water use requirements for full build-out scenarios of the Millers SEZ have not changed from the values presented in the Draft Solar PEIS (see Tables 11.7.9.2-1 and 11.7.9.2-2

TABLE 11.7.9.1-7 Groundwater Surface Elevations Relevant to the Proposed Millers SEZ as Revised

Parameter	Monitoring Station (USGS ID)				
	375821117440201	381906117232001	380645117315801	380830117272001	381345117230501
Period of record	1969	1966–1984	1969	1952–1975	1981
No. of observations	1	3	1	12	1
Surface elevation (ft)[a]	4,742	5,301	4,773	4,790	4,881
Well depth (ft)	97	100	NA[c]	61	150
Depth to water, median (ft)	47.56	69.1	8.34	39.34	78
Depth to water, range (ft)	–	67.7–69.1	–	0–58.38	–
Depth to water, most recent observation (ft)	47.56	67.7	8.34	58.38	78
Distance to SEZ (mi)[b]	19	11	5	3	7

[a] To convert ft to m, multiply by 0.3048.

[b] To convert mi to km, multiply by 1.6093.

[c] NA = no data collected for this parameter.

Source: USGS (2012b).

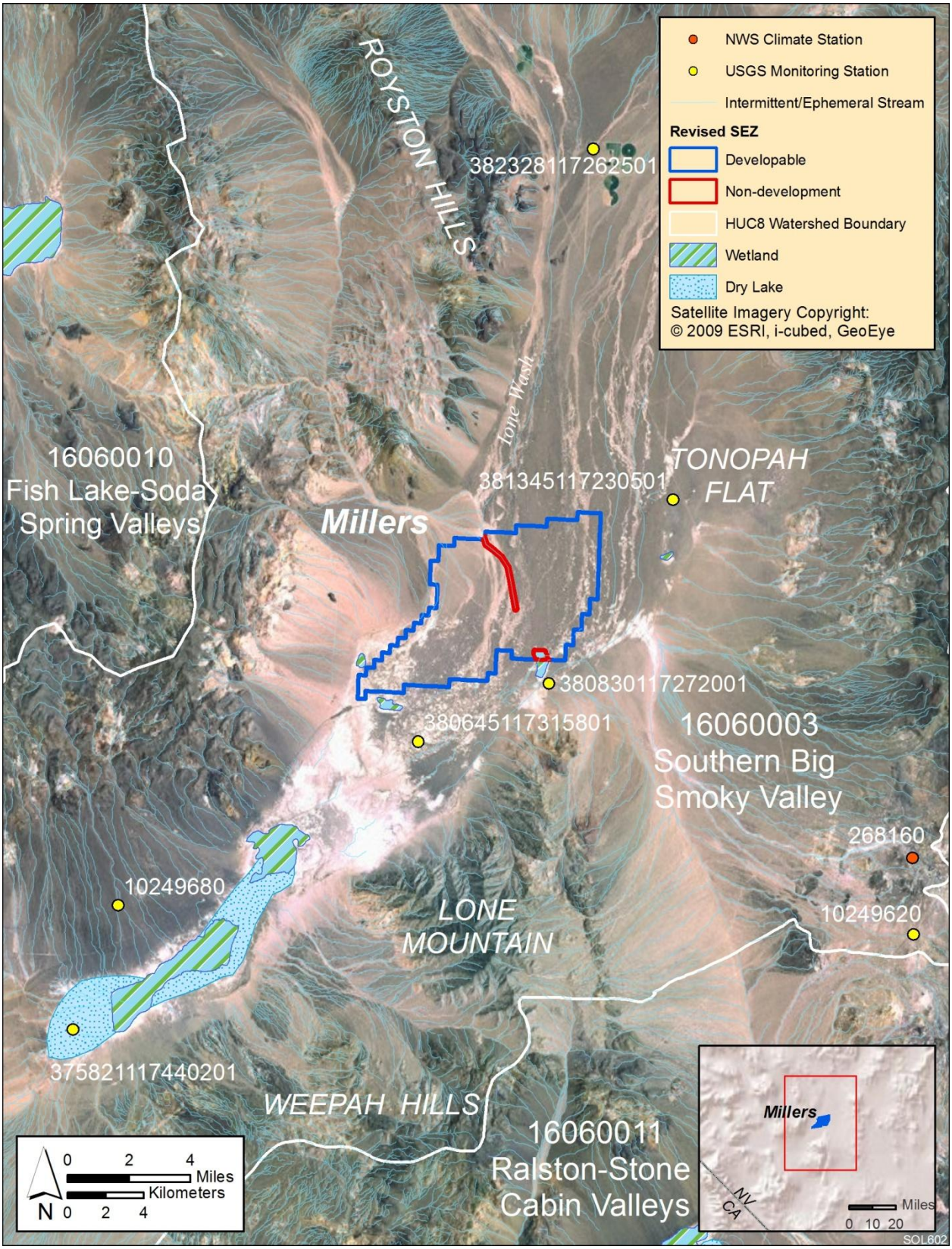

FIGURE 11.7.9.1-1 Water Features near the Proposed Millers SEZ as Revised

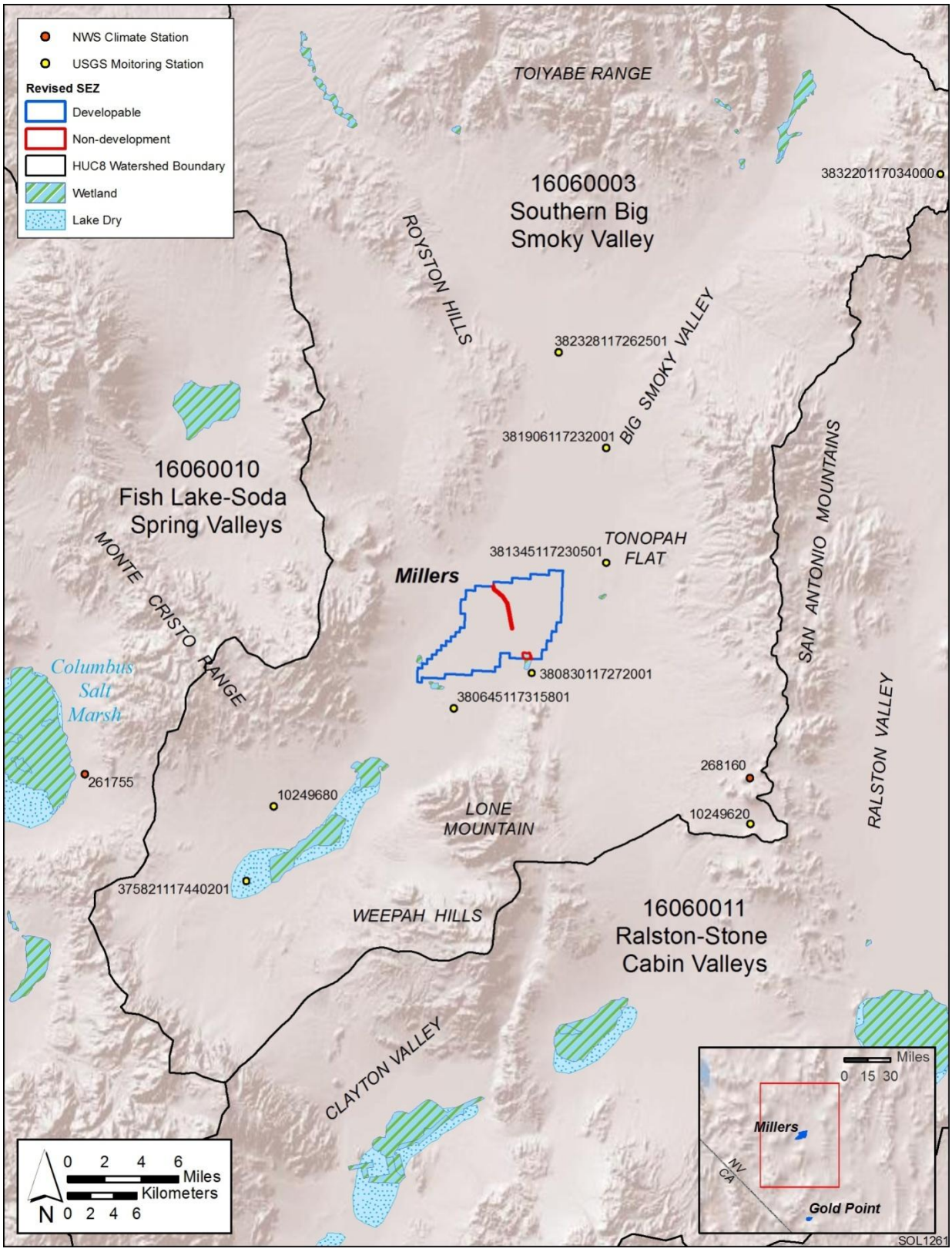

FIGURE 11.7.9.1-2 Water Features within the Southern Big Smoky Valley Watershed, Which Includes the Proposed Millers SEZ as Revised

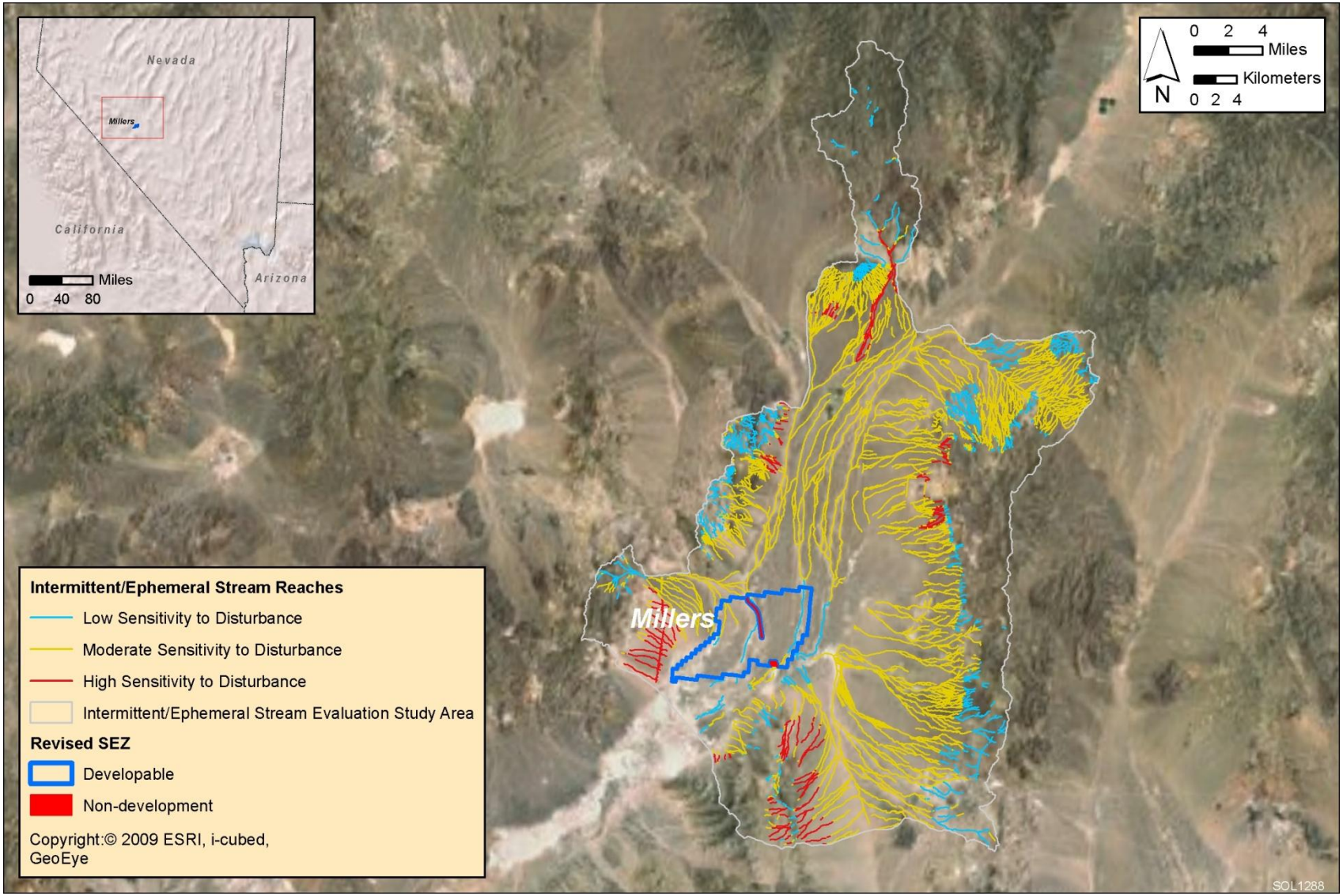

FIGURE 11.7.9.2-1 Intermittent/Ephemeral Stream Channel Sensitivity to Surface Disturbances in the Vicinity of the Proposed Millers SEZ as Revised

TABLE 11.7.9.2-1 Groundwater Budget for the Big Smoky Valley-Tonopah Flat Groundwater Basin, Which Includes the Proposed Millers SEZ as Revised

Process	Amount[a]
Inputs	
Total recharge (ac-ft/yr)	4,000[b]–12,000
Subsurface underflow (ac-ft/yr)	2,000–3,000
Outputs	
Subsurface outflow (ac-ft/yr)	8,000
Evapotranspiration (ac-ft/yr)	6,000
Discharge to springs (ac-ft/yr)	230
Groundwater withdrawals (ac-ft/yr)	Unknown
Permitted water rights (ac-ft/yr)	23,930[c]
Storage	
Storage (ac-ft)	5,000,000–7,000,000[d]
Perennial yield (ac-ft/yr)	6,000[e]

[a] To convert ac-ft to m^3, multiply by 1,234.

[b] Flint et al. (2004).

[c] NDWR (2012).

[d] Storage estimates include the northern Big Smoky Valley basin.

[e] Defined by the NDWR.

Source: Rush and Schroer (1971).

in the Draft Solar PEIS). This section presents additional analyses pertaining to groundwater, which include a basin-scale groundwater budget and a simplified, one-dimensional groundwater model of potential groundwater drawdown. Only a summary of the results from these groundwater analyses is presented in this section; more information on methods and results is presented in Appendix O.

The estimated total water use requirements during the peak construction year are as high as 3,300 ac-ft/yr (4.1 million m^3/yr). The total annual water requirements for operations can be categorized as low, medium, and high groundwater pumping scenarios that represent full build-out of the SEZ assuming PV, dry-cooled parabolic trough, and wet-cooled parabolic trough, respectively (a 30% operational time was considered for all solar facility types on the basis of operations estimates for utility-scale solar energy facilities). This categorization results in water use estimates that range from 77 to 13,468 ac-ft/yr (95,000 to 16.6 million m^3/yr), or a total of 1,540 to 269,360 ac-ft (1.9 million to 332 million m^3) over the 20-year operation period.

TABLE 11.7.9.2-2 Aquifer Characteristics and Assumptions Used in the One-Dimensional Groundwater Model for the Proposed Millers SEZ as Revised

Parameter	Value[a]
Aquifer type/conditions	Basin fill/unconfined
Aquifer thickness (ft)	1,500–2,500
Transmissivity (ft^2/day)	3,300–6,600 (4,950)
Specific yield	0.15
Analysis period (yr)	20
High pumping scenario (ac-ft/yr)[b]	13,468
Medium pumping scenario (ac-ft/yr)	1,918
Low pumping scenario (ac-ft/yr)	77

[a] Values in parentheses used for model.

[b] To convert ac-ft to m^3, multiply by 1,234.

Source: Rush and Schroer (1971).

The estimated groundwater withdrawal rates were compared to the basin-scale groundwater budget for the Big Smoky Valley-Tonopah Flat groundwater basin shown in Table 11.7.9.2-1. The peak construction year water requirements range from 28 to 83% of the total recharge to the basin. Impacts associated with peak construction year water requirements are minimal, considering the short duration of this water demand relative to the groundwater resources in the basin. The long duration of groundwater pumping during operations (20 years) poses a greater threat to groundwater resources. The high pumping scenario represents 224% of the perennial yield and between 112% and 337% of the basin-scale recharge on an annual basis, and 5% of the groundwater storage over the 20-year operations period (Figure 11.7.9.2-2). Significant groundwater impacts are expected with this level of groundwater pumping. The medium pumping scenario represents 32% of the perennial yield and between 16% and 48% of the basin-scale recharge on an annual basis, and less than 1% of the groundwater storage over the 20-year operations period. The low pumping scenario represents approximately 1% of the perennial yield and basin-scale recharge. The low pumping scenario would have minimal impacts on groundwater resources, while the medium pumping scenario could have some localized impacts on water resources given its magnitude relative to the basin-scale recharge.

Groundwater budgeting allows for quantification of complex groundwater processes at the basin scale, but it ignores the temporal and spatial components of how groundwater withdrawals affect groundwater surface elevations, groundwater flow rates, and connectivity to surface water features such as streams, wetlands, playas, and riparian vegetation. A one-dimensional groundwater modeling analysis was performed to present a simplified depiction of the spatial and temporal effects of groundwater withdrawals by examining groundwater drawdown in a radial direction around the center of the SEZ for the low, medium, and high

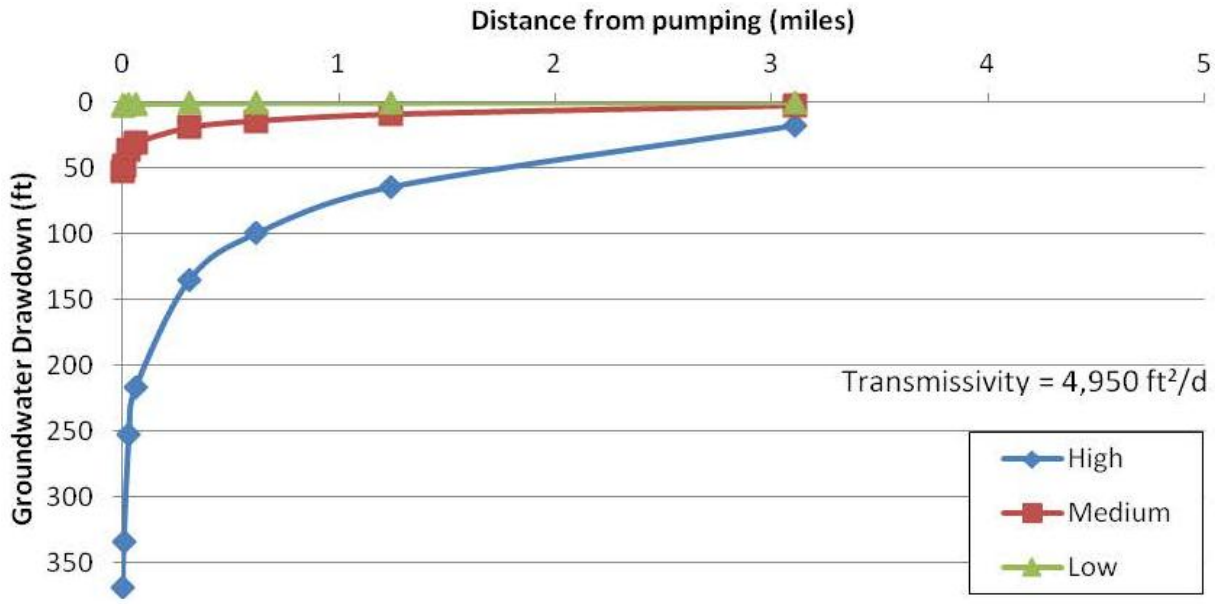

FIGURE 11.7.9.2-2 Estimated One-Dimensional Groundwater Drawdown Resulting from High, Medium, and Low Groundwater Pumping Scenarios over the 20-Year Operational Period at the Proposed Millers SEZ as Revised

pumping scenarios. A detailed discussion of the groundwater modeling analysis is presented in Appendix O. Note, however, that the aquifer parameters used for the one-dimensional groundwater model (Table 11.7.9.2-2) represent available literature data, and that the model aggregates these value ranges into a simplistic representation of the aquifer.

Depth to groundwater ranges from 8 to 78 ft (2 to 24 m) in the vicinity of the SEZ. The one-dimensional groundwater modeling results suggest that groundwater withdrawals for solar energy development would result in groundwater drawdown in the vicinity of the SEZ (approximately a 3-mi [5-km] radius) that ranges up to 360 ft (110 m) for the high pumping scenario, up to 50 ft (15 m) for the medium pumping scenario, and less than 1 ft (0.3 m) for the low pumping scenario. The modeling results suggest that groundwater drawdown is localized to the vicinity of the SEZ for all pumping scenarios. However, the groundwater drawdown associated with the high pumping scenario is very substantial and could possibly disrupt groundwater flow, which is from northeast to southwest. A disruption in groundwater flow could potentially affect the wetland and dry lake regions in the southwestern portion of Big Smoky Valley (Figure 11.7.9.1-1).

11.7.9.2.3 Off-Site Impacts: Roads and Transmission Lines

As stated in the Draft Solar PEIS, impacts associated with the construction of roads and transmission lines primarily deal with water use demands for construction, water quality concerns relating to potential chemical spills, and land disturbance effects on the natural hydrology. Water needed for transmission line construction activities (e.g., for soil compaction,

dust suppression, and potable supply for workers) could be trucked to the construction area from an off-site source. If this occurred, water use impacts at the SEZ would be negligible. The Draft Solar PEIS assessment of impacts on water resources from road and transmission line construction remains valid.

11.7.9.2.4 Summary of Impacts on Water Resources

The additional information and analyses of water resources presented in this update agree with information provided in the Draft Solar PEIS, which indicates that the Millers SEZ is located in a high-elevation desert valley where water resources are primarily groundwater, along with intermittent/ephemeral surface water features. Groundwater is primarily found in the basin-fill aquifer that is connected to adjacent valleys. Current groundwater withdrawals for the basin are unknown, but current water right allocations far exceed the perennial yield for the basin set by the NDWR. The majority of water right allocations are committed to mining and irrigation purposes, but it is not known how much of these allotted water rights are in use.

Disturbances to intermittent/ephemeral streams within the Millers SEZ could potentially affect groundwater recharge and ecological habitats, particularly in the vicinity of the alluvial fan in the northwest portion of the SEZ. In addition, portions of the braided stream channel of Ione Wash extend outside the non-development regions of the SEZ. As stated in the Draft Solar PEIS, floodplain maps in the adjacent Nye County suggest that 100-year floodplain areas would be associated with the braided channels of Ione Wash and Peavine Creek, and design features in Appendix A of this Final PEIS describe the need to avoid identified 100-year floodplain areas.

Groundwater withdrawals associated with the high pumping scenario have the potential to cause significant groundwater drawdown in the vicinity of the SEZ. The magnitude of groundwater drawdown could affect groundwater flow patterns, which could limit groundwater supply to the wetland and dry lake areas located in the southwestern portion of Big Smoky Valley. Groundwater withdrawals associated with the low and medium pumping scenarios have much less impact on groundwater drawdown. Aside from these modeled groundwater drawdown ranges, the transfer of water rights in the overallocated Big Smoky Valley–Tonopah Flat groundwater basin may limit the amount of groundwater available for solar energy facilities, which would ultimately be decided by the water right review process conducted by the NDWR.

Predicting impacts associated with groundwater withdrawal is often difficult given the heterogeneity of aquifer characteristics, the long time period between the onset of pumping and its effects, and limited data. One of the primary mitigation measures to protect water resources is the implementation of long-term monitoring and adaptive management (see Section A.2.4 of Appendix A). For groundwater, this requires the combination of monitoring and modeling to fully identify the temporal and spatial extent of potential impacts. The framework for a long-term monitoring program would need to be created for the Millers SEZ once development planning begins.

11.7.9.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on surface water and groundwater are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the programmatic design features will provide some protection of and reduce impacts on water resources.

On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, the following SEZ-specific design feature has been identified:

- Groundwater analyses suggest that full build-out of wet-cooled technologies is not feasible; for mixed-technology development scenarios, any proposed wet-cooled projects should utilize water conservation practices.

The need for additional SEZ-specific design features will be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

11.7.10 Vegetation

11.7.10.1 Affected Environment

The Millers SEZ was revised to identify 253 acres (1.0 km^2) along Ione Wash and a wetland located in the southeast portion of the SEZ as non-development areas.

As presented in Section 11.7.10.1 of the Draft Solar PEIS, 5 cover types were identified within the area of the proposed Millers SEZ, while 15 cover types were identified in the area of indirect effects. Sensitive habitats on the SEZ include desert dry washes, wetland, and playa. Figure 11.7.10.1-1 shows the cover types within the affected area of the Miller SEZ as revised.

11.7.10.2 Impacts

As presented in the Draft Solar PEIS, the construction of solar energy facilities within the proposed Millers SEZ would result in direct impacts on plant communities because of the removal of vegetation within the facility footprint during land-clearing and land-grading operations. Approximately 80% of the SEZ would be expected to be cleared with full development of the SEZ. As a result of the changes to the proposed SEZ developable area, approximately 13,227 acres (54 $km^{2)}$ would be cleared.

Overall impact magnitude categories were based on professional judgment and include (1) *small*: a relatively small proportion (≤1%) of the cover type within the SEZ region would be lost; (2) *moderate*: an intermediate proportion (>1 but ≤10%) of a cover type would be lost; and (3) *large*: >10% of a cover type would be lost.

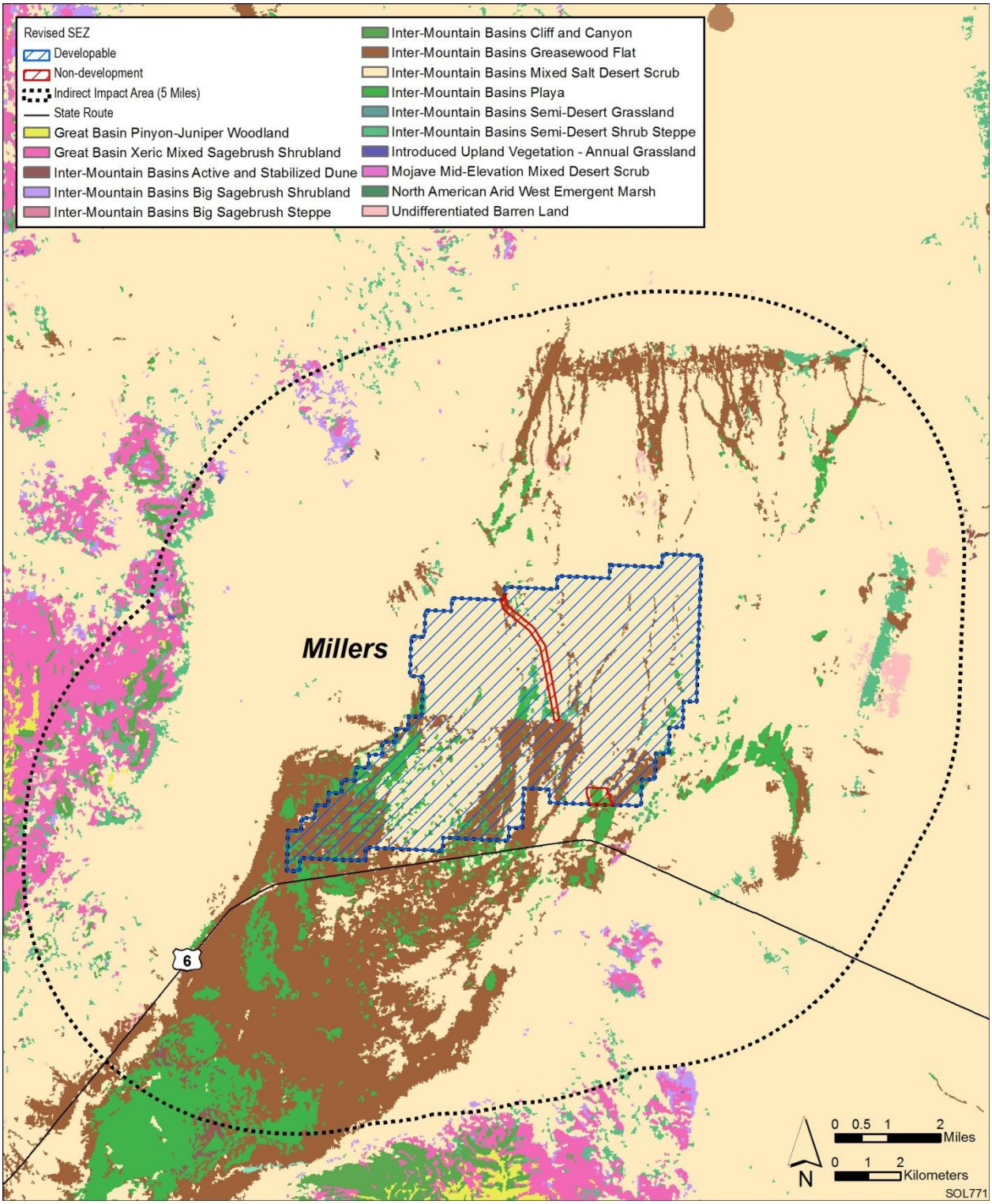

FIGURE 11.7.10.1-1 Land Cover Types within the Proposed Millers SEZ as Revised

11.7.10.2.1 Impacts on Native Species

The analysis presented in the Draft Solar PEIS based on the original Millers SEZ developable area indicated that development would result in a moderate impact on two land cover types and a small impact on all other land cover types occurring within the SEZ (Table 11.7.10.1-1 in the Draft Solar PEIS). Development within the revised Millers SEZ could still directly affect all the cover types evaluated in the Draft Solar PEIS; the impact magnitudes would remain unchanged compared to original estimates in the Draft Solar PEIS.

Direct impacts on dry washes, playas, and unmapped wetlands could still occur. Indirect impacts on habitats associated with wetlands and playas within or near the SEZ, as described in the Draft Solar PEIS, could also occur, including impacts on groundwater-dependent communities in the region, such as those in the vicinity of playas.

11.7.10.2.2 Impacts from Noxious Weeds and Invasive Plant Species

As presented in the Draft Solar PEIS, land disturbance from project activities and indirect effects of construction and operation within the Millers SEZ could potentially result in the establishment or expansion of noxious weeds and invasive species populations, potentially including those species listed in Section 11.7.10.1 of the Draft Solar PEIS. Impacts such as reduced restoration success and possible widespread habitat degradation could still occur; however, a small reduction in the potential for such impacts would result from the reduced developable area of the SEZ.

11.7.10.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on vegetation are described in Section A.2.2 of Appendix A of this Final Solar PEIS. SEZ-specific species and habitats will determine how programmatic design features are applied, for example:

- Dry washes, playas, and unmapped wetlands within the SEZ shall be avoided to the extent practicable, and any impacts minimized and mitigated in consultation with appropriate agencies. A buffer area shall be maintained around wetlands, playas, and dry washes to reduce the potential for impacts.

- Appropriate engineering controls shall be used to minimize impacts on the playa wetland and other playas, as well as Ione Wash shrub communities, dry washes, and greasewood flat habitats within the SEZ, and downstream occurrences resulting from surface water runoff, erosion, sedimentation, altered hydrology, accidental spills, or fugitive dust deposition to these habitats. Appropriate buffers and engineering controls will be determined through agency consultation.

- Groundwater withdrawals shall be limited to reduce the potential for indirect impacts on plant communities that access groundwater, such as those in the vicinity of playas. Potential impacts on springs associated with the Tonopah Flat basin or other hydrologically connected basins shall be determined through hydrological studies.

- A qualified botanist or plant ecologist should survey for candelaria blazing star (*Mentzelia candelariae*) during a period when it is flowering and easily documented prior to any construction activities within the SEZ. If individuals are located, individuals or populations shall be avoided through fencing and flagging of the area, including an appropriate buffer zone.

It is anticipated that the implementation of these programmatic design features will reduce a high potential for impacts from invasive species and impacts on dry washes, playas, wetlands, and springs to a minimal potential for impact. Residual impacts on groundwater-dependent habitats could result from limited groundwater withdrawal and the like; however, it is anticipated that these impacts would be avoided in the majority of instances.

On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, no SEZ-specific design features for vegetation have been identified. Some SEZ-specific design features may be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

11.7.11 Wildlife and Aquatic Biota

For the assessment of potential impacts on wildlife and aquatic biota, overall impact magnitude categories were based on professional judgment and include (1) *small*: a relatively small proportion (≤1%) of the species' habitat within the SEZ region would be lost; (2) *moderate*: an intermediate proportion (>1 but ≤10%) of the species' habitat would be lost; and (3) *large*: >10% of the species' habitat would be lost.

11.7.11.1 Amphibians and Reptiles

11.7.11.1.1 Affected Environment

As presented in the Draft Solar PEIS, representative amphibian and reptile species expected to occur within the Millers SEZ include the Great Plains toad (*Bufo cognatus*), red-spotted toad (*Bufo punctatus*), desert horned lizard (*Phrynosoma platyrhinos*), Great Basin collared lizard (*Crotaphytus bicinctores*), long-nosed leopard lizard (*Gambelia wislizenii*), western fence lizard (*Sceloporus occidentalis*), western whiptail (*Cnemidophorus tigris*), zebra-tailed lizard (*Callisaurus draconoides*), coachwhip (*Masticophis flagellum*), glossy snake (*Arizona elegans*), gophersnake (*Pituophis catenifer*), groundsnake (*Sonora semiannulata*), and nightsnake (*Hypsiglena torquata*).

11.7.11.1.2 Impacts

As presented in the Draft Solar PEIS, solar energy development within the proposed Millers SEZ could affect potentially suitable habitats for the representative amphibian and reptile species. The analysis presented in the Draft Solar PEIS for the Millers SEZ indicated that development would result in a small overall impact on all representative amphibian and reptile species (Table 11.7.11.1-1 in the Draft Solar PEIS). The reduction in the developable area of the Millers SEZ would result in reduced habitat impacts for all representative amphibian and reptile species; the resultant impact levels for all the representative species would still be small.

11.7.11.1.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on amphibian and reptile species are described in Section A.2.2 of Appendix A of this Final Solar PEIS. With the implementation of required programmatic design features, impacts on amphibian and reptile species will be reduced.

On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, the following SEZ-specific design feature has been identified:

- Wash and playa habitats should be avoided. The Ione Wash and a small wetland area in the SEZ have been identified as non-development areas, but other avoidable wash and playa habitats may exist within the SEZ.

If SEZ-specific design features are implemented in addition to required programmatic design features, impacts on amphibian and reptile species would be small. The need for additional SEZ-specific design features will be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

11.7.11.2 Birds

11.7.11.2.1 Affected Environment

As presented in the Draft Solar PEIS, a large number of bird species could occur or have potentially suitable habitat within the affected area of the proposed Millers SEZ. Representative bird species identified in the Draft Solar PEIS included (1) shorebirds: killdeer (*Charadrius vociferus*); (2) passerines: ash-throated flycatcher (*Myiarchus cinerascens*), Bewick's wren (*Thryomanes bewickii*), common poorwill (*Phalaenoptilus nuttallii*), common raven (*Corvus corax*), greater roadrunner (*Geococcyx californianus*), horned lark (*Eremophila alpestris*), ladder-backed woodpecker (*Picoides scalaris*), Le Conte's thrasher (*Toxostoma lecontei*), lesser nighthawk (*Chordeiles acutipennis*), loggerhead shrike (*Lanius ludovicianus*), northern mockingbird (*Mimus polyglottos*), rock wren (*Salpinctes obsoletus*), sage sparrow (*Amphispiza belli*), Say's phoebe (*Sayornis saya*), and western kingbird (*Tyrannus verticalis*); (3) raptors:

American kestrel (*Falco sparverius*), golden eagle (*Aquila chrysaetos*), great horned owl (*Bubo virginianus*), long-eared owl (*Asio otus*), red-tailed hawk (*Buteo jamaicensis*), and turkey vulture (*Cathartes aura*); and (4) upland gamebirds: chukar (*Alectoris chukar*), Gambel's quail (*Callipepla gambelii*), mourning dove (*Zenaida macroura*), and wild turkey (*Meleagris gallopavo*).

11.7.11.2.2 Impacts

As presented the Draft Solar PEIS, solar energy development within the Millers SEZ could affect potentially suitable bird habitats. The analysis presented in the Draft Solar PEIS indicated that development would result in a small overall impact on most representative bird species and a moderate impact on the killdeer (Table 11.7.11.2-1 in the Draft Solar PEIS). The reduction in the developable area of the Millers SEZ would result in reduced impacts on habitat for all representative bird species; the resultant impact levels for all the representative bird species would be small. Most habitats suitable for the killdeer are among the areas now identified as undevelopable within the SEZ.

11.7.11.2.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on bird species are described in Section A.2.2 of Appendix A of this Final Solar PEIS. With the implementation of required programmatic design features, impacts on bird species will be reduced.

On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, the following SEZ-specific design feature has been identified:

- Wash and playa habitats should be avoided. The Ione Wash and a small wetland area in the SEZ have been identified as non-development areas, but other avoidable wash and playa habitats may exist within the SEZ.

If SEZ-specific design features are implemented in addition to required programmatic design features, impacts on bird species would be small. The need for additional SEZ-specific design features will be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

11.7.11.3 Mammals

11.7.11.3.1 Affected Environment

As presented in the Draft Solar PEIS, a large number of mammal species were identified that could occur or have potentially suitable habitat within the affected area of the proposed Millers SEZ. Representative mammal species identified in the Draft Solar PEIS included (1) big

game species: cougar (*Puma concolor*), elk (*Cervis canadensis*), mule deer (*Odocoileus hemionus*), and pronghorn (*Antilocapra americana*); (2) furbearers and small game species: the American badger (*Taxidea taxus*), black-tailed jackrabbit (*Lepus californicus*), bobcat (*Lynx rufus*), coyote (*Canis latrans*, common), desert cottontail (*Sylvilagus audubonii*), gray fox (*Urocyon cinereoargenteus*), kit fox (*Vulpes macrotis*), and red fox (*Vulpes vulpes*); and (3) small nongame species: Botta's pocket gopher (*Thomomys bottae*), cactus mouse (*Peromyscus eremicus*), canyon mouse (*P. crinitis*), deer mouse (*P. maniculatus*), desert shrew (*Notiosorex crawfordi*), desert woodrat (*Neotoma lepida*), little pocket mouse (*Perognathus longimembris*), long-tailed pocket mouse (*Chaetodipus formosus*), Merriam's pocket mouse (*Dipodomys merriami*), northern grasshopper mouse (*Onychomys leucogaster*), southern grasshopper mouse (*O. torridus*), western harvest mouse (*Reithrodontomys megalotis*), and white-tailed antelope squirrel (*Ammospermophilus leucurus*). Bat species that may occur within the area of the SEZ include the big brown bat (*Eptesicus fuscus*), Brazilian free-tailed bat (*Tadarida brasiliensis*), California myotis (*Myotis californicus*), hoary bat (*Lasiurus cinereus*), little brown myotis (*M. lucifugus*), long-legged myotis (*M. volans*), silver-haired bat (*Lasionycteris noctivagans*), and western pipistrelle (*Parastrellus hesperus*).

11.7.11.3.2 Impacts

As presented in the Draft Solar PEIS, solar energy development within the proposed Millers SEZ could affect potentially suitable habitats of mammal species. The analysis presented in the Draft Solar PEIS indicated that development would result in a small overall impact on all representative mammal species analyzed (Table 11.7.11.3-1 in the Draft Solar PEIS). The reduction in the developable area of the Millers SEZ would result in reduced habitat impacts for all representative mammal species; however, resultant impact levels for all the representative mammal species would still be small. This conclusion also applies to mapped year-round pronghorn habitat that occurs within the Millers SEZ.

11.7.11.3.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on mammals are described in Section A.2.2 of Appendix A of this Final Solar PEIS. With the implementation of required programmatic design features, impacts on mammal species will be reduced.

On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, the following SEZ-specific design features have been identified:

- The fencing around the solar energy development should not block the free movement of mammals, particularly big game species.

- Wash and playa habitats should be avoided. The Ione Wash and a small wetland area in the SEZ have been identified as non-development areas, but other avoidable wash and playa habitats may exist within the SEZ.

If these SEZ-specific design features are implemented in addition to the required programmatic design features, impacts on mammal species would be small. The need for additional SEZ-specific design features will be identified through the process of preparing parcels for competitive offer and subsequent project specific analysis.

11.7.11.4 Aquatic Biota

11.7.11.4.1 Affected Environment

There are no perennial streams or water bodies present in the proposed Millers SEZ. Updates to the Draft Solar PEIS include the following:

- The intermittent/ephemeral Ione Wash, which runs for approximately 3 mi (5 km) through the center of the proposed Millers SEZ, has now been identified as a non-development area.
- Wetlands within the SEZ have been identified as non-development areas.
- The route of a new transmission line described in the Draft Solar PEIS is no longer assumed.

The surface water features in the Millers SEZ have not been surveyed for aquatic biota. As stated in Appendix C of the Supplement to the Draft Solar PEIS, site surveys can be conducted at the project-specific level to characterize the aquatic biota, if present, within the SEZ.

11.7.11.4.2 Impacts

The types of impacts on aquatic habitats and biota that could occur from the development of utility-scale solar energy facilities are discussed in Section 5.10.3 of the Draft Solar PEIS and this Final Solar PEIS. Aquatic habitats, including wetland areas, present on or near the Millers SEZ could be affected by solar energy development in a number of ways, including (1) direct disturbance, (2) deposition of sediments, (3) changes in water quantity, and (4) degradation of water quality. The impact assessment provided in the Draft Solar PEIS remains valid, with the following update:

- The intermittent/ephemeral Ione Wash and wetlands within the SEZ have been identified as non-development areas; therefore, they would not be directly affected by construction activities. However, as described in the Draft Solar PEIS, streams and wetlands could be affected indirectly by solar development activities within the SEZ.

11.7.11.4.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on aquatic biota are described in Section A.2.2 of Appendix A of this Final Solar PEIS. SEZ-specific resources and conditions will be considered when programmatic design features are applied, for example:

- Appropriate engineering controls shall be implemented to minimize the amount of contaminants and sediment entering Ione Wash and the wetlands within the SEZ.

- Development shall avoid any additional wetlands identified during future site-specific fieldwork.

It is anticipated that implementation of these programmatic design features will reduce impacts on aquatic biota, and if the utilization of water from groundwater or surface water sources is adequately controlled to maintain sufficient water levels in nearby aquatic habitats, the potential impacts on aquatic biota from solar energy development at the Millers SEZ would be small.

On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, no SEZ-specific design features for aquatic biota have been identified. Some SEZ-specific design features may be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

11.7.12 Special Status Species

11.7.12.1 Affected Environment

As presented in the Draft Solar PEIS, 19 special status species were identified that could occur or have potentially suitable habitat within the affected area of the proposed Millers SEZ. Since publication of the Draft Solar PEIS, 11 additional special status species have been identified that could potentially occur in the affected area based on county-level occurrences and the presence of potentially suitable habitat. These 11 special status species are all designated sensitive species by the Nevada BLM office and include (1) plants: Tecopa bird's beak (*Cordylanthus tecopensis*); (2) invertebrates: Wong's pyrg (*Pyrgulopsis wongi*); and (3) birds: golden eagle, loggerhead shrike, and long-eared owl; and (4) mammals: big brown bat, Brazilian free-tailed bat, California myotis, hoary bat, long-legged myotis, and silver-haired bat. These additional species are discussed below.

Tecopa Bird's Beak. The Tecopa bird's beak is a plant species in the figwort family that is designated as sensitive by the Nevada BLM. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. This species is known from Esmeralda and Nye Counties in Nevada, as well as Inyo County, California. It inhabits open, moist alkali-crusted clay soils of

deep springs seeps and outflow drainages at elevations between 2,100 and 4,900 ft (640 and 1,494 m). Other potentially suitable habitat types include mesic meadows and playa margins. On the basis of SWReGAP land cover types, potentially suitable playa habitat may occur on the SEZ and throughout portions of the area of indirect effects (Table 11.7.12.1-1).

Wong's Pyrg. The Wong's pyrg is a freshwater springsnail that is known from the Owens River drainage and the Deep Springs, Fish Lake, and Huntoon Valleys in Inyo County, California, as well as Mineral County, Nevada (Hershler 1994). Although potentially suitable habitat for this species does not occur on the SEZ, this species is known to occur in aquatic habitats in Mineral County, Nevada, approximately 48 mi (77 km) southwest of the SEZ. Although none of these species occur within 5 mi (8 km) of the SEZ, their habitats could be affected by groundwater withdrawals to serve solar energy development on the SEZ.

Golden Eagle. The golden eagle is an uncommon to common permanent resident in southern Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. The species inhabits rolling foothills, mountain areas, and desert shrublands. It nests on cliff faces and in large trees in open areas. Potentially suitable foraging habitat for this species may occur in the SEZ and throughout the area of indirect effects (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land cover types, there is no suitable nesting habitat within the area of direct effects, but about 720 acres (3 km^2) of cliff and rock outcrop habitat that may be potentially suitable nesting habitat occurs in the area of indirect effects.

Loggerhead Shrike. The loggerhead shrike is a common winter resident in lowlands and foothills of southern Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. The species occurs in open habitats with shrubs, trees, utility lines, or other perches. The highest densities of this species occur in open-canopied foothill forests. On the basis of an evaluation of the SWReGAP habitat suitability model for this species, potentially suitable foraging habitat for the loggerhead shrike may occur on the SEZ and throughout the area of indirect effects (Table 11.7.12.1-1).

Long-Eared Owl. The long-eared owl is an uncommon year-round resident in southern Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. The species inhabits desert shrubland environments in proximity to riparian areas such as desert washes. It nests in trees using old nests from other birds or squirrels. Potentially suitable foraging habitat for this species may occur on the SEZ and throughout the area of indirect effects (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land cover types, no suitable nesting habitat occurs within the SEZ, but about 54 acres (0.2 km^2) of pinyon-juniper woodlands that may be potentially suitable nesting habitat occurs in the area of indirect effects.

TABLE 11.7.12.1-1 Habitats, Potential Impacts, and Potential Mitigation for Special Status Species That Could Be Affected by Solar Energy Development on the Proposed Millers SEZ as Revised[a]

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]		Overall Impact Magnitude[g] and Species-Specific Mitigation[h]
				Within SEZ (Direct Effects)[e]	Outside SEZ (Indirect Effects)[f]	
Plants						
Tecopa bird's beak	Cordylanthus tecopensis	BLM-S; FWS-SC; NV-S2	Known from Esmeralda and Nye Counties, Nevada, as well as Inyo County, California. Inhabits open, moist alkali-crusted clay soils of deep springs, seeps, and outflow drainages. About 97,000 acres[i] of potentially suitable habitat occurs within the SEZ region.	1,000 acres of potentially suitable habitat lost (1.0% of available potentially suitable habitat)	6,600 acres of potentially suitable habitat (6.8% of available potentially suitable habitat)	Moderate overall impact. Habitats on the SEZ may be directly affected by construction and operations. Habitats on the SEZ and in the area of indirect effects may also be affected by groundwater withdrawal. The impact of water withdrawal on the regional groundwater system that supports aquatic and mesic habitat in the SEZ region would depend on the volume of water withdrawn to support construction and operations. Avoiding or limiting withdrawals from this regional groundwater system could reduce impacts on this species to small or negligible levels. Note that these potential impact magnitudes and potential mitigation measures also apply to all groundwater-dependent special status species that may occur in the SEZ region.

TABLE 11.7.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]		Overall Impact Magnitude[f] and Species-Specific Mitigation[h]
				Within SEZ (Direct Effects)[e]	Outside SEZ (Indirect Effects)[f]	
Invertebrates						
Wong's pyrg	*Pyrgulopsis wongi*	BLM-S; NV-S1	Known from Mineral County, Nevada and Inyo County, California. Occurs in aquatic habitats in the Owens River drainage and the Deep Springs, Fish Lake, and Huntoon Valleys. Nearest recorded occurrences are from Mineral County, approximately 48 mi[j] southwest of the SEZ. The amount of suitable habitat in the SEZ region has not been determined.	0 acres	0 acres within the 5-mi area surrounding the SEZ, but suitable habitat elsewhere in the SEZ region could be affected by groundwater withdrawals.	Small to large overall impact. Habitats may be affected by groundwater withdrawal. See Topeca bird's beak for potential impacts and mitigation measures applicable to all groundwater-dependent special status species.
Birds						
Golden eagle	*Aquila chrysaetos*	BLM-S	An uncommon to common permanent resident and migrant in southern Nevada. Habitat includes rolling foothills, mountain areas, and desert shrublands. Nests on cliff faces and in large trees in open areas. About 4,850,000 acres of potentially suitable habitat occurs within the SEZ region.	15,000 acres of potentially suitable habitat lost (0.3% of available potentially suitable habitat)	120,100 acres of potentially suitable habitat (2.5% of available potentially suitable habitat)	Small overall impact. Direct impact on foraging habitat only. Avoidance of direct impacts on all foraging habitat is not feasible because suitable foraging habitat is widespread in the area of direct effects.
Loggerhead shrike	*Lanius ludovicianus*	BLM-S	A common winter resident in lowlands and foothills in southern Nevada. Prefers open habitats with shrubs, trees, utility lines, or other perches. Highest density occurs in open-canopied foothill forests. About 4,800,000 acres of potentially suitable habitat occurs within the SEZ region.	15,000 acres of potentially suitable habitat lost (0.3% of available potentially suitable habitat)	120,000 acres of potentially suitable habitat (2.5% of available potentially suitable habitat)	Small overall impact. Direct impact on foraging habitat only. Avoidance of direct impacts on all foraging habitat is not feasible because suitable foraging habitat is widespread in the area of direct effects.

TABLE 11.7.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]		Overall Impact Magnitude[f] and Species-Specific Mitigation[h]
				Within SEZ (Direct Effects)[e]	Outside SEZ (Indirect Effects)[f]	
Birds (Cont.)						
Long-eared owl	*Asio otus*	BLM-S	An uncommon yearlong resident in southern Nevada. Occurs in desert shrubland environments in proximity to riparian areas such as desert washes. Nests in trees using old nests from other birds or squirrels. About 4,800,000 acres of potentially suitable habitat occurs within the SEZ region.	15,000 acres of potentially suitable habitat lost (0.3% of available potentially suitable habitat)	119,600 acres of potentially suitable habitat (2.5% of available potentially suitable habitat)	Small overall impact. Direct impact on foraging habitat only. Avoidance of direct impacts on all foraging habitat is not feasible because suitable foraging habitat is widespread in the area of direct effects.
Mammals						
Big brown bat	*Eptesicus fuscus*	BLM-S	Occurs throughout the southwestern United States in various habitat types. Uncommon in hot desert environments, but may occur in areas in close proximity to water sources such as lakes and washes. Roosts in buildings, caves, mines, and trees. About 3,700,000 acres of potentially suitable habitat occurs within the SEZ region.	16,400 acres of potentially suitable habitat lost (0.4% of available potentially suitable habitat)	121,300 acres of potentially suitable habitat (2.7% of available potentially suitable habitat)	Small overall impact. Direct impact on foraging habitat only. Avoidance of direct impacts on all foraging habitat is not feasible because suitable foraging habitat is widespread in the area of direct effects.
Brazilian free-tailed bat	*Tadarida brasiliensis*	BLM-S	A fairly common year-round resident in southern Nevada. Occurs in a variety of habitats including woodlands, shrublands, and grasslands. Roosts in caves, crevices, and buildings. About 4,250,000 acres of potentially suitable habitat occurs within the SEZ region.	16,400 acres of potentially suitable habitat lost (0.4% of available potentially suitable habitat)	122,000 acres of potentially suitable habitat (2.9% of available potentially suitable habitat)	Small overall impact. Direct impact on foraging habitat only. Avoidance of direct impacts on all foraging habitat is not feasible because suitable foraging habitat is widespread in the area of direct effects.

TABLE 11.7.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]		Overall Impact Magnitude[f] and Species-Specific Mitigation[h]
				Within SEZ (Direct Effects)[e]	Outside SEZ (Indirect Effects)[f]	
Mammals (Cont.)						
California myotis	*Myotis californicus*	BLM-S	A common year-round resident in southern Nevada. Occurs in a variety of habitats including desert, chaparral, woodlands, and forests. Roosts primarily in crevices, but will also us buildings, mines, and hollow trees. About 3,500,000 acres of potentially suitable habitat occurs within the SEZ region.	16,400 acres of potentially suitable habitat lost (0.5% of available potentially suitable habitat)	121,100 acres of potentially suitable habitat (3.5% of available potentially suitable habitat)	Small overall impact. Direct impact on foraging habitat only. Avoidance of direct impacts on all foraging habitat is not feasible because suitable foraging habitat is widespread in the area of direct effects.
Hoary bat	*Lasiurus cinereus*	BLM-S	The most widespread North American bat species, occurs throughout southern Nevada in various habitat types. Occurs in habitats such as woodlands, foothills, desert shrublands, and chaparral. Roosts primarily in trees. About 1,100,000 acres of potentially suitable habitat occurs within the SEZ region.	4,700 acres of potentially suitable habitat lost (0.4% of available potentially suitable habitat)	27,300 acres of potentially suitable habitat (2.5% of available suitable habitat)	Small overall impact. Direct impact on foraging habitat only. Avoidance of direct impacts on all foraging habitat is not feasible because suitable foraging habitat is widespread in the area of direct effects.

TABLE 11.7.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]		Overall Impact Magnitude[f] and Species-Specific Mitigation[h]
				Within SEZ (Direct Effects)[e]	Outside SEZ (Indirect Effects)[f]	
Mammals (Cont.)						
Long-legged myotis	*Myotis volans*	BLM-S	Common to uncommon year-round resident in southern Nevada. Uncommon in desert and arid grassland environments. Most common in woodlands above 4,000 ft elevation. Forages in chaparral, scrub, woodlands, and desert shrublands. Roosts in trees, caves, and crevices. About 3,700,000 acres of potentially suitable habitat occurs within the SEZ region.	16,400 acres of potentially suitable habitat lost (0.4% of available potentially suitable habitat)	121,200 acres of potentially suitable habitat (3.3% of available potentially suitable habitat)	Small overall impact. Direct impact on foraging habitat only. Avoidance of direct impacts on all foraging habitat is not feasible because suitable foraging habitat is widespread in the area of direct effects.
Silver-haired bat	*Lasionycteris noctivagans*	BLM-S	Uncommon year-round resident in desert habitats of southern Nevada. Forages in coniferous forests, foothill woodlands, and montane riparian habitats. May also forage in desert shrublands. Primarily roosts in hollow trees. About 4,150,000 acres of potentially suitable habitat occurs within the SEZ region.	13,300 acres of potentially suitable habitat lost (0.3% of available potentially suitable habitat)	103,000 acres of potentially suitable habitat (2.5% of available potentially suitable habitat)	Small overall impact. Direct impact on foraging habitat only. Avoidance of direct impacts on all foraging habitat is not feasible because suitable foraging habitat is widespread in the area of direct effects.

[a] The species presented in this table represent new species identified following publication of the Draft Solar PEIS or a re-evaluation of those species that were determined to have moderate or large impacts in the Draft Solar PEIS. The other special status species for this SEZ are identified in Table 11.7.12.1-1 of the Draft Solar PEIS.

[b] BLM-S = listed as sensitive by the BLM.

Footnotes continued on next page.

TABLE 11.7.12.1-1 (Cont.)

[c] Potentially suitable habitat was determined by using SWReGAP habitat suitability models (USGS 2004, 2007). Area of potentially suitable habitat for each species is presented for the SEZ region, which is defined as the area within 50 mi (80 km) of the SEZ center.

[d] Maximum area of potentially suitable habitat that could be affected relative to availability within the SEZ region. Habitat availability for each species within the region was determined by using SWReGAP habitat suitability models (USGS 2004, 2007). This approach probably overestimates the amount of suitable habitat in the project area.

[e] Direct effects within the SEZ consist of the ground-disturbing activities associated with construction and the maintenance of an altered environment associated with operations.

[f] Area of indirect effects was assumed to be the area adjacent to the SEZ within 5 mi (8 km) of the SEZ boundary where ground-disturbing activities would not occur. Indirect effects include effects from surface runoff, dust, noise, lighting, and so on from project developments. The potential degree of indirect effects would decrease with increasing distance away from the SEZ.

[g] Overall impact magnitude categories were based on professional judgment and are as follows: (1) *small*: ≤1% of the population or its habitat would be lost and the activity would not result in a measurable change in carrying capacity or population size in the affected area; (2) *moderate*: >1 but ≤10% of the population or its habitat would be lost and the activity would result in a measurable but moderate (not destabilizing) change in carrying capacity or population size in the affected area; (3) *large*: >10% of a population or its habitat would be lost and the activity would result in a large, measurable, and destabilizing change in carrying capacity or population size in the affected area. Note that much greater weight was given to the magnitude of direct effects because those effects would be difficult to mitigate. Design features would reduce most indirect effects to negligible levels.

[h] Species-specific mitigations are suggested here, but final mitigations should be developed in consultation with state and federal agencies and should be based on pre-disturbance surveys.

[i] To convert acres to km^2, multiply by 0.004047.

[j] To convert mi to km, multiply by 1.6093.

Big Brown Bat. The big brown bat is a fairly common year-round resident in southern Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. The big brown bat is uncommon in desert habitats but may occur in desert shrublands in close proximity to water sources. The species inhabits desert shrubland environments in proximity to riparian areas such as desert washes. It roosts in buildings, caves, mines, and trees. Potentially suitable foraging habitat for this species may occur on the SEZ and throughout the area of indirect effects (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (forests and rock outcrops) does not occur on the SEZ. However, approximately 54 acres (0.2 km^2) of woodland habitat (pinyon-juniper) and 720 acres (3 km^2) of cliff and rock outcrop habitat that may be potentially suitable roosting habitat occur in the area of indirect effects.

Brazilian Free-Tailed Bat. The Brazilian free-tailed bat is a fairly common year-round resident in southern Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. The species inhabits woodlands, shrublands, and grasslands. It roosts in caves and crevices. Potentially suitable foraging habitat for this species may occur on the SEZ and throughout the area of indirect effects (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (forests and rock outcrops) does not occur on the SEZ. However, approximately 720 acres (3 km^2) of cliff and rock outcrop habitat that may be potentially suitable roosting habitat occurs in the area of indirect effects.

California Myotis. The California myotis is a fairly common year-round resident in southern Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. The species inhabits desert, chaparral, woodlands, and forests. It roosts primarily in crevices but will also use buildings, mines, and hollow trees. Potentially suitable foraging habitat for this species may occur on the SEZ and throughout the area of indirect effects (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (forests and rock outcrops) does not occur on the SEZ. However, approximately 54 acres (0.2 km^2) of woodland habitat (pinyon-juniper) and 720 acres (3 km^2) of cliff and rock outcrop habitat that may be potentially suitable roosting habitat occur in the area of indirect effects.

Hoary Bat. The hoary bat is a fairly common year-round resident in southern Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. The species inhabits woodlands, foothills, desert shrublands, and chaparral. It roosts primarily in trees. Potentially suitable foraging habitat for this species may occur on the SEZ and throughout the area of indirect effects (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (forests) does not occur on the SEZ (Table 11.7.12.1-1). However, approximately 54 acres (0.2 km^2) of woodland habitat (pinyon-juniper) that may be potentially suitable roosting habitat occurs in the area of indirect effects.

Long-Legged Myotis. The long-legged myotis is a common to uncommon year-round resident in southern Nevada. This species was not analyzed for the Millers SEZ in the Draft

Solar PEIS. This species is uncommon in desert and arid grassland environments and most common in woodlands above 4,000 ft (1,291 m) elevation. It forages in chaparral, scrub, woodlands, and desert shrublands and roosts in trees, caves, and crevices. Potentially suitable foraging habitat for this species may occur on the SEZ and throughout the area of indirect effects (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (forests and rock outcrops) does not occur on the SEZ. However, approximately 54 acres (0.2 km^2) of woodland habitat (pinyon-juniper) and 720 acres (3 km^2) of cliff and rock outcrop habitat that may be potentially suitable roosting habitat occur in the area of indirect effects.

Silver-Haired Bat. The silver-haired bat is an uncommon year-round resident in southern Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. The species inhabits coniferous forests, foothill woodlands, and montane riparian habitats. It may also forage in desert shrublands. This species primarily roosts in hollow trees. Potentially suitable foraging habitat for this species may occur on the SEZ and throughout the area of indirect effects (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (forests) does not occur on the SEZ (Table 11.7.12.1-1). However, approximately 54 acres (0.2 km^2) of woodland habitat (pinyon-juniper) that may be potentially suitable roosting habitat occurs in the area of indirect effects.

11.7.12.2 Impacts

Overall impact magnitude categories were based on professional judgment and include (1) *small*: a relatively small proportion (≤1%) of the special status species' habitat within the SEZ region would be lost; (2) *moderate*: an intermediate proportion (>1 but ≤10%) of the special status species' habitat would be lost; and (3) *large*: >10% of the special status species' habitat would be lost.

As presented in the Draft Solar PEIS, solar energy development within the Millers SEZ could affect potentially suitable habitats of special status species. The analysis presented in the Draft Solar PEIS for the Millers SEZ indicated that development would result in no impact or a small overall impact on all special status species. Development within the Millers SEZ could still affect the same 19 species evaluated in the Draft Solar PEIS; however, the reduction in the developable area would result in reduced (and still small) impact levels compared to original estimates in the Draft Solar PEIS.

In addition, impacts on the 11 BLM-designated sensitive species that were not evaluated for the Millers SEZ in the Draft Solar PEIS are discussed below and in Table 11.7.12.1-1. The impact assessment for these additional species was carried out in the same way as for those species analyzed in the Draft Solar PEIS (Section 11.7.12.2 of the Draft Solar PEIS).

Tecopa Bird's Beak. The Tecopa bird's beak was not analyzed for the Millers SEZ in the Draft Solar PEIS. This species is known from Esmeralda and Nye Counties in Nevada, as

well as Inyo County, California. It inhabits open, moist alkali-crusted clay soils of deep springs, seeps, and outflow drainages at elevations between 2,100 and 4,900 ft (640 and 1,494 m). Other potentially suitable habitat types include mesic meadows and playa margins. On the basis of SWReGAP land cover types, approximately 1,000 acres (4 km^2) of potentially suitable habitat on the revised area of the Millers SEZ could be directly affected by construction and operations (Table 11.7.12.1-1). This direct effects area represents 1.0% of potentially suitable habitat in the SEZ region. About 6,600 acres (27 km^2) of potentially suitable habitat occurs in the area of indirect effects; this area represents about 6.8% of the available suitable foraging habitat in the SEZ region (Table 11.7.12.1-1). Most of this suitable habitat is represented by playa habitat.

The overall impact on the Tecopa bird's beak from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised area of the Millers SEZ is considered moderate, because the amount of potentially suitable foraging habitat for this species in the area of direct effects represents greater than 1% but less than 10% of potentially suitable foraging habitat in the SEZ region. Groundwater withdrawals to support solar energy development on the SEZ may affect habitat for the Tecopa bird's beak on the SEZ and throughout the area of indirect effects. Impacts of groundwater depletion from solar energy development in the revised area of the Millers SEZ cannot be quantified without identification of the cumulative amount of groundwater withdrawals needed to support development on the SEZ. Consequently, the overall impact on this species would depend in part on the solar energy technology deployed, the scale of development within the SEZ, the type of cooling system used, and the degree of influence of water withdrawals in the SEZ on drawdown and surface water discharges in habitats supporting this species (Table 11.7.12.1-1).

The implementation of design features and complete avoidance or limitations of groundwater withdrawals from the regional groundwater system would reduce impacts on the Tecopa bird's beak and other groundwater-dependent species to small or negligible levels. Impacts can be better quantified for specific projects once water needs are identified and through application of a regional groundwater model.

Wong's Pyrg. The Wong's pyrg is a freshwater springsnail that is known from the Owens River drainage and the Deep Springs, Fish Lake, and Huntoon Valleys in Inyo County, California, as well as Mineral County, Nevada (Hershler 1994). Although potentially suitable habitat for this species does not occur on the SEZ, this species is known to occur in aquatic habitats in Mineral County, Nevada, approximately 48 mi (77 km) southwest of the SEZ. Groundwater withdrawn from the regional groundwater basin to serve construction and operations of solar energy facilities on the SEZ could affect aquatic and riparian habitats for this species. Such impacts would result from the lowering of the water table and alteration of hydrologic processes.

Impacts of groundwater depletion from solar energy development in the revised area of the Millers SEZ cannot be quantified without identification of the cumulative amount of groundwater withdrawals needed to support development on the SEZ. Consequently, the overall impact on the Wong's pyrg could range from small to large and would depend in part on the solar energy technology deployed, the scale of development within the SEZ, the type of cooling

system used, and the degree of influence of water withdrawals in the SEZ on drawdown and surface water discharges in habitats supporting these species (Table 11.7.12.1-1).

The implementation of design features and complete avoidance or limitations of groundwater withdrawals from the regional groundwater system would reduce impacts on the Wong's pyrg and other groundwater-dependent species to small or negligible levels. Impacts can be better quantified for specific projects once water needs are identified and through application of a regional groundwater model.

Golden Eagle. The golden eagle was not analyzed for the Millers SEZ in the Draft Solar PEIS. This species is an uncommon to common permanent resident in southern Nevada, and potentially suitable foraging habitat is expected to occur in the affected area of the Millers SEZ. Approximately 15,000 acres (61 km^2) of potentially suitable foraging habitat on the SEZ could be directly affected by construction and operations (Table 11.7.12.1-1). This direct effects area represents 0.3% of potentially suitable habitat in the SEZ region. About 120,100 acres (486 km^2) of potentially suitable foraging habitat occurs in the area of indirect effects; this area represents about 2.5% of the available suitable foraging habitat in the SEZ region (Table 11.7.12.1-1). Most of this area could serve as foraging habitat (open shrublands). On the basis of an evaluation of SWReGAP land cover types, there is no suitable nesting habitat within the area of direct effects. However, about 720 acres (3 km^2) of cliff and rock outcrop habitat that may be potentially suitable nesting habitat occurs in the area of indirect effects.

The overall impact on the golden eagle from construction, operation, and decommissioning of utility-scale solar energy facilities within the Millers SEZ is considered small, because the amount of potentially suitable foraging habitat for this species in the area of direct effects represents less than 1% of potentially suitable foraging habitat in the SEZ region. The implementation of programmatic design features is expected to be sufficient to reduce indirect impacts on this species to negligible levels. Avoidance of direct impacts on all potentially suitable foraging habitat is not a feasible way to mitigate impacts on the golden eagle, because potentially suitable shrubland is widespread throughout the area of direct effects and readily available in other portions of the affected area.

Loggerhead Shrike. The loggerhead shrike was not analyzed for the Millers SEZ in the Draft Solar PEIS. This species is a common winter resident in lowlands and foothills of southern Nevada. Approximately 15,000 acres (61 km^2) of potentially suitable foraging habitat on the SEZ could be directly affected by construction and operations (Table 11.7.12.1-1). This direct effects area represents 0.3% of potentially suitable habitat in the SEZ region. About 120,000 acres (486 km^2) of potentially suitable foraging habitat occurs in the area of indirect effects; this area represents about 2.5% of the available suitable foraging habitat in the SEZ region (Table 11.7.12.1-1).

The overall impact on the loggerhead shrike from construction, operation, and decommissioning of utility-scale solar energy facilities within the Millers SEZ is considered small, because the amount of potentially suitable foraging habitat for this species in the area of

direct effects represents less than 1% of potentially suitable foraging habitat in the SEZ region. The implementation of programmatic design features is expected to be sufficient to reduce indirect impacts on this species to negligible levels. Avoidance of direct impacts on all potentially suitable foraging habitat is not a feasible way to mitigate impacts on the loggerhead shrike, because potentially suitable shrubland is widespread throughout the area of direct effects and is readily available in other portions of the affected area.

Long-Eared Owl. The long-eared owl was not analyzed for the Millers SEZ in the Draft Solar PEIS. This species is an uncommon to common permanent resident in southern Nevada and potentially suitable foraging habitat is expected to occur in the affected area of the Millers SEZ. Approximately 15,000 acres (61 km^2) of potentially suitable foraging habitat on the SEZ could be directly affected by construction and operations (Table 11.7.12.1-1). This direct effects area represents 0.3% of potentially suitable habitat in the SEZ region. About 119,600 acres (484 km^2) of potentially suitable foraging habitat occurs in the area of indirect effects; this area represents about 2.5% of the available suitable foraging habitat in the SEZ region (Table 11.7.12.1-1).

The overall impact on the long-eared owl from construction, operation, and decommissioning of utility-scale solar energy facilities within the Millers SEZ is considered small, because the amount of potentially suitable foraging habitat for this species in the area of direct effects represents less than 1% of potentially suitable foraging habitat in the SEZ region. The implementation of programmatic design features is expected to be sufficient to reduce indirect impacts on this species to negligible levels. Avoidance of direct impacts on all potentially suitable foraging habitat is not a feasible way to mitigate impacts on the long-eared owl, because potentially suitable shrubland is widespread throughout the area of direct effects and is readily available in other portions of the affected area.

Big Brown Bat. The big brown bat is a fairly common year-round resident in southern Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. Suitable roosting habitats (caves, forests, and buildings) are not expected to occur on the SEZ, but the availability of suitable roosting sites in the area of indirect effects has not been determined. Approximately 16,400 acres (66 km^2) of potentially suitable foraging habitat on the SEZ could be directly affected by construction and operations (Table 11.7.12.1-1). This direct effects area represents about 0.4% of potentially suitable foraging habitat in the region. About 121,300 acres (491 km^2) of potentially suitable foraging habitat occurs in the area of indirect effects; this area represents about 2.7% of the available suitable foraging habitat in the region (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (forests and rock outcrops) does not occur on the SEZ. However, approximately 54 acres (0.2 km^2) of woodland habitat (pinyon-juniper) and 720 acres (3 km^2) of cliff and rock outcrop habitat that may be potentially suitable roosting habitat occurs in the area of indirect effects.

The overall impact on the big brown bat from construction, operation, and decommissioning of utility-scale solar energy facilities within the Millers SEZ is considered small, because the amount of potentially suitable habitat for this species in the area of direct

effects represents less than 1% of potentially suitable habitat in the region. The implementation of programmatic design features is expected to be sufficient to reduce indirect impacts on this species to negligible levels. Avoidance of all potentially suitable foraging habitat is not a feasible way to mitigate impacts, because potentially suitable foraging habitat is widespread throughout the area of direct effects and is readily available in other portions of the SEZ region.

Brazilian Free-Tailed Bat. The Brazilian free-tailed bat is a fairly common year-round resident in southern Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. Suitable roosting habitats (caves, forests, and buildings) are not expected to occur on the SEZ, but the availability of suitable roosting sites in the area of indirect effects has not been determined. Approximately 16,400 acres (66 km^2) of potentially suitable foraging habitat on the revised SEZ could be directly affected by construction and operations (Table 11.7.12.1-1). This direct effects area represents about 0.4% of potentially suitable foraging habitat in the region. About 122,000 acres (494 km^2) of potentially suitable foraging habitat occurs in the area of indirect effects; this area represents about 2.9% of the available suitable foraging habitat in the region (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (forests and rock outcrops) does not occur on the SEZ. However, approximately 54 acres (0.2 km^2) of woodland habitat (pinyon-juniper) and 720 acres (3 km^2) of cliff and rock outcrop habitat that may be potentially suitable roosting habitat occur in the area of indirect effects.

The overall impact on the Brazilian free-tailed bat from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised Millers SEZ is considered small, because the amount of potentially suitable habitat for this species in the area of direct effects represents less than 1% of potentially suitable habitat in the region. The implementation of programmatic design features is expected to be sufficient to reduce indirect impacts on this species to negligible levels. Avoidance of all potentially suitable foraging habitat is not a feasible way to mitigate impacts, because potentially suitable foraging habitat is widespread throughout the area of direct effects and is readily available in other portions of the SEZ region.

California Myotis. The California myotis is a fairly common year-round resident in southern Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. Suitable roosting habitats (forests and rock outcrops) are not expected to occur on the SEZ, but the availability of suitable roosting sites in the area of indirect effects has not been determined. Approximately 16,400 acres (66 km^2) of potentially suitable foraging habitat on the SEZ could be directly affected by construction and operations (Table 11.7.12.1-1). This direct effects area represents about 0.5% of potentially suitable foraging habitat in the region. About 121,100 acres (490 km^2) of potentially suitable foraging habitat occurs in the area of indirect effects; this area represents about 3.5% of the available suitable foraging habitat in the region (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (forests and rock outcrops) does not occur on the SEZ. However, approximately 54 acres (0.2 km^2) of woodland habitat (pinyon-juniper) and 720 acres (3 km^2) of cliff and rock outcrop habitat that may be potentially suitable roosting habitat occur in the area of indirect effects.

The overall impact on the California myotis from construction, operation, and decommissioning of utility-scale solar energy facilities within the Millers SEZ is considered small, because the amount of potentially suitable habitat for this species in the area of direct effects represents less than 1% of potentially suitable habitat in the region. The implementation of programmatic design features is expected to be sufficient to reduce indirect impacts on this species to negligible levels. Avoidance of all potentially suitable foraging habitat is not a feasible way to mitigate impacts, because potentially suitable foraging habitat is widespread throughout the area of direct effects and is readily available in other portions of the SEZ region.

Hoary Bat. The hoary bat is a fairly common year-round resident in southern Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. Suitable roosting habitats (forests) are not expected to occur on the SEZ, but the availability of suitable roosting sites in the area of indirect effects has not been determined. Approximately 4,700 acres (19 km^2) of potentially suitable foraging habitat on the SEZ could be directly affected by construction and operations (Table 11.7.12.1-1). This direct effects area represents 0.4% of potentially suitable foraging habitat in the region. About 27,300 acres (110 km^2) of potentially suitable foraging habitat occurs in the area of indirect effects; this area represents about 2.5% of the available suitable foraging habitat in the region (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat does not occur on the SEZ. However, approximately 54 acres (0.2 km^2) of woodland habitat (pinyon-juniper) that may be potentially suitable roosting habitat occurs in the area of indirect effects.

The overall impact on the hoary bat from construction, operation, and decommissioning of utility-scale solar energy facilities within the Millers SEZ is considered small, because the amount of potentially suitable habitat for this species in the area of direct effects represents less than 1% of potentially suitable habitat in the region. The implementation of programmatic design features is expected to be sufficient to reduce indirect impacts on this species to negligible levels. Avoidance of all potentially suitable foraging habitat is not a feasible way to mitigate impacts, because potentially suitable foraging habitat is widespread throughout the area of direct effects and is readily available in other portions of the SEZ region.

Long-Legged Myotis. The long-legged myotis is a common to uncommon year-round resident in southern Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. Suitable roosting habitats (forests and rock outcrops) are not expected to occur on the SEZ, but the availability of suitable roosting sites in the area of indirect effects has not been determined. Approximately 16,400 acres (66 km^2) of potentially suitable foraging habitat on the SEZ could be directly affected by construction and operations (Table 11.7.12.1-1). This direct effects area represents about 0.4% of potentially suitable foraging habitat in the region. About 121,200 acres (490 km^2) of potentially suitable foraging habitat occurs in the area of indirect effects; this area represents about 3.3% of the available suitable foraging habitat in the region (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (forests and rock outcrops) does not occur on the SEZ. However, approximately 54 acres (0.2 km^2) of woodland habitat (pinyon-juniper) and 720 acres (3 km^2) of

cliff and rock outcrop habitat that may be potentially suitable roosting habitat occur in the area of indirect effects.

The overall impact on the long-legged myotis from construction, operation, and decommissioning of utility-scale solar energy facilities within the Millers SEZ is considered small, because the amount of potentially suitable habitat for this species in the area of direct effects represents less than 1% of potentially suitable habitat in the region. The implementation of programmatic design features is expected to be sufficient to reduce indirect impacts on this species to negligible levels. Avoidance of all potentially suitable foraging habitat is not a feasible way to mitigate impacts, because potentially suitable foraging habitat is widespread throughout the area of direct effects and is readily available in other portions of the SEZ region.

Silver-Haired Bat. The silver-haired bat is an uncommon year-round resident in southern Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. Suitable roosting habitats (forests) are not expected to occur on the SEZ, but the availability of suitable roosting sites in the area of indirect effects has not been determined. Approximately 13,300 acres (54 km^2) of potentially suitable foraging habitat on the revised SEZ could be directly affected by construction and operations (Table 11.7.12.1-1). This direct effects area represents about 0.3% of potentially suitable foraging habitat in the region. About 103,000 acres (417 km^2) of potentially suitable foraging habitat occurs in the area of indirect effects; this area represents about 2.5% of the available suitable foraging habitat in the region (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat does not occur on the SEZ. However, approximately 54 acres (0.2 km^2) of woodland habitat (pinyon-juniper) that may be potentially suitable roosting habitat occurs in the area of indirect effects.

The overall impact on the silver-haired bat from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised Millers SEZ is considered small, because the amount of potentially suitable habitat for this species in the area of direct effects represents less than 1% of potentially suitable habitat in the region. The implementation of programmatic design features is expected to be sufficient to reduce indirect impacts on this species to negligible levels. Avoidance of all potentially suitable foraging habitat is not a feasible way to mitigate impacts, because potentially suitable foraging habitat is widespread throughout the area of direct effects and is readily available in other portions of the SEZ region.

11.7.12.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features are described in Section A.2.2 of Appendix A of the Draft Solar PEIS. SEZ-specific resources and conditions will determine how programmatic design features are applied, for example:

- Pre-disturbance surveys shall be conducted within the SEZ to determine the presence and abundance of special status species, including those identified in

Table 11.7.12.1-1 of the Draft Solar PEIS and in Table 11.7.12.1-1 of this update for the Final Solar PEIS. Disturbance to occupied habitats for these species shall be avoided or minimized to the extent practicable. If avoiding or minimizing impacts on occupied habitats is not possible, translocation of individuals from areas of direct effects or compensatory mitigation of direct effects on occupied habitats may be used to reduce impacts. A comprehensive mitigation strategy for special status species that uses one or more of these options to offset the impacts of development should be generated in coordination with the appropriate federal and state agencies.

- Coordination shall be conducted with the USFWS and NDOW for the Crescent Dunes aegialian scarab beetle, Crescent Dunes serican scarab beetle, and greater sage-grouse (*Centrocercus urophasianus*)—species that are candidates or under review for ESA listing. Coordination would identify an appropriate survey protocol, and mitigation requirements, which may include avoidance, minimization, translocation, or compensation.

- Avoiding or limiting groundwater withdrawals from the regional groundwater basin to serve solar energy development on the SEZ will reduce or prevent impacts on the following groundwater-dependent special status species that may occur more than 5 mi (8 km) from the SEZ boundary: Tecopa bird's beak and Wong's pyrg.

It is anticipated that implementation of the programmatic design features will reduce the majority of impacts on the special status species from habitat disturbance and groundwater use.

On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, no SEZ-specific design features have been identified. Some SEZ-specific design features may be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis. Projects will comply with terms and conditions set forth by the USFWS Biological Opinion resulting from the programmatic consultations and any necessary project-specific ESA 7 consultations.

11.7.13 Air Quality and Climate

Except as noted below, the information for air quality and climate presented for the affected environment of the Draft Solar PEIS remains valid.

11.7.13.1 Affected Environment

11.7.13.1.1 Existing Air Emissions

The Draft Solar PEIS presented Esmeralda County emissions data for 2002. More recent data for 2008 (EPA 2011a) were reviewed for this Final Solar PEIS. The two emissions

inventories used different sources and assumptions; for example, the 2008 data did not include biogenic emissions. All emissions were lower in the more recent data. These changes would not affect the modeled air quality impacts presented in this update.

11.7.13.1.2 Air Quality

The calendar quarterly average NAAQS of 1.5 $\mu g/m^3$ for lead (Pb) presented in Table 11.7.13.1-2 of the Draft Solar PEIS has been replaced by the rolling 3-month standard (0.15 $\mu g/m^3$). The federal 24-hour and annual SO_2 and 1-hour O_3 standards have been revoked as well (EPA 2011b). These changes will not affect the modeled air quality impacts presented in this update. Nevada State Ambient Air Quality Standards (SAAQS) have not been changed.

11.7.13.2 Impacts

11.7.13.2.1 Construction

Methods and Assumptions

Except as noted below, the methods and modeling assumptions are the same as those presented in the Draft Solar PEIS. The developable area of the proposed Millers SEZ was reduced by about 2% from 16,787 acres (67.9 km^2) to 16,534 acres (66.9 km^2). Given this small change, remodeling was not warranted, and the modeled air quality impacts and conclusions presented in the Draft Solar PEIS (as summarized below) remain valid.[1]

Results

Predicted 24-hour and annual PM_{10} and 24-hour $PM_{2.5}$ concentration levels could exceed the standard levels at the SEZ boundaries and in the immediate surrounding areas during the construction of solar facilities. To reduce potential impacts on ambient air quality and in compliance with programmatic design features, aggressive dust control measures would be used. Potential particulate air quality impacts on nearby communities would not exceed standard levels. Impacts from construction activities are not anticipated to exceed Class I PSD PM_{10} increments at the nearest federal Class I area (John Muir WA in California). Construction activities are not subject to the PSD program, and the comparison provides only a screen for

[1] At this programmatic level, detailed information on construction activities, such as facility size, type of solar technology, heavy equipment fleet, activity level, work schedule, and so forth, is not known; thus air quality modeling cannot be conducted. Therefore, it has been assumed that an area of 6,000 acres (24.28 km^2) in total would be disturbed continuously; the modeling results and discussion here should be interpreted in that context. During the site-specific project phase, more detailed information would be available and more realistic air quality modeling analysis could be conducted. It is likely that impacts on ambient air quality predicted for specific projects would be much lower than those in this Final Solar PEIS.

gauging the magnitude of the impact. Accordingly, it is anticipated that impacts of construction activities on ambient air quality would be moderate and temporary.

Given the small change in developable area, emissions from construction equipment and vehicles would be almost the same as those identified in the Draft Solar PEIS. Any potential impacts on AQRVs at nearby federal Class I areas would be about the same as those in the Draft Solar PEIS, and the conclusions in the Draft Solar PEIS remain valid. Construction-related emissions are temporary and thus would cause some unavoidable but short-term impacts.

11.7.13.2.2 Operations

The reduction of about 2% in developable area of the proposed Millers SEZ decreases the generation capacity and annual power generation by a similar percentage and thus potentially avoided emissions presented in the Draft Solar PEIS. Updated estimates for emissions potentially avoided by full solar development of the proposed Millers SEZ can be obtained from the table in the Draft Solar PEIS by reducing the tabulated emissions shown in Table 11.7.13.2-2 of the Draft Solar PEIS by 1.5%. For example, depending on the technology used, up to 3,116 tons/yr of NO_X (= 98.5% × the lower end value of 3,164 tons/yr tabulated in the Draft Solar PEIS) could be avoided by full solar development of the proposed Millers SEZ as revised for this Final Solar PEIS. These tabulated results are consistent with, but slightly smaller than, the results presented in the Draft Solar PEIS. Solar facilities built in the Millers SEZ could be more important than those built in other states in terms of reducing fuel combustion–related emissions.

11.7.13.2.3 Decommissioning and Reclamation

The discussion in the Draft Solar PEIS remains valid. Decommissioning and reclamation activities would be of short duration, and their potential impacts would be moderate and temporary.

11.7.13.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce air quality impacts are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Limiting dust generation during construction and operations is a required programmatic design feature under the BLM Solar Energy Program. These extensive fugitive dust control measures would keep off-site PM levels as low as possible during construction.

On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, no SEZ-specific design features for air quality have been identified for the proposed Millers SEZ. Some SEZ-specific design features may be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

11.7.14 Visual Resources

11.7.14.1 Affected Environment

No boundary revisions were identified for the proposed SEZ in the Supplement to the Draft Solar PEIS; however, non-development areas were identified. For the proposed Millers SEZ, 253 acres (1.0 km^2) of the Ione Wash and a small wetland area in the southern portion of the SEZ were identified as non-development areas. The remaining developable area within the SEZ is 16,534 acres (66.9 km^2).

An updated VRI map for the SEZ and surrounding lands is shown in Figure 11.7.14.1-1; it provides information collected in BLM's 2010 and 2011 VRI, which was finalized in October 2011 (BLM 2011a). As shown, the updated VRI values for the SEZ primarily are VRI Class III, indicating moderate visual values; a small portion in the northeast corner of the SEZ is VRI Class IV, indicating low visual values. The SEZ area received a low scenic quality rating, because it lacks topographic variability, diverse vegetation, water features, and range of colors. The SEZ area's adjacent scenery was rated as a positive scenic quality attribute. The SEZ area received a high sensitivity rating, because of the amount of use, public interest, and adjacent land uses within the U.S. 95 corridor.

On the basis of the 2011 VRI class assignments, lands in the Battle Mountain District Office within the 25-mi (40-km), 650-ft (198-m) viewshed of the SEZ now include 26,184 acres (106.0 km^2) of VRI Class II areas, 206,124 acres (834.2 km^2) of VRI Class III areas, and 284,059 acres (1,149.5 km^2) of VRI Class IV areas.

As indicated in the Draft Solar PEIS, the Tonopah RMP (BLM 1997) indicates that the SEZ and surrounding area are managed as VRM Class IV, which permits major modification of the existing character of the landscape. Since the publication of the Draft Solar PEIS, the Battle Mountain District Office has been preparing a new comprehensive RMP and associated EIS. The RMP/EIS will replace the existing 1997 Tonopah RMP and 1986 Shoshone-Eureka RMP. The RMP revision process began in December 2010 (BLM 2011b).

11.7.14.2 Impacts

The summary of impacts provided in the Draft Solar PEIS remains valid, as follows. Development within the SEZ could create a visually complex landscape that would contrast strongly with the strongly horizontal landscape of the flat valley in which the SEZ is located. Large visual impacts on the SEZ and surrounding lands within the SEZ viewshed would be associated with solar energy development because of major modification of the character of the existing landscape. The potential exists for additional impacts from construction and operation of transmission lines and access roads within the SEZ.

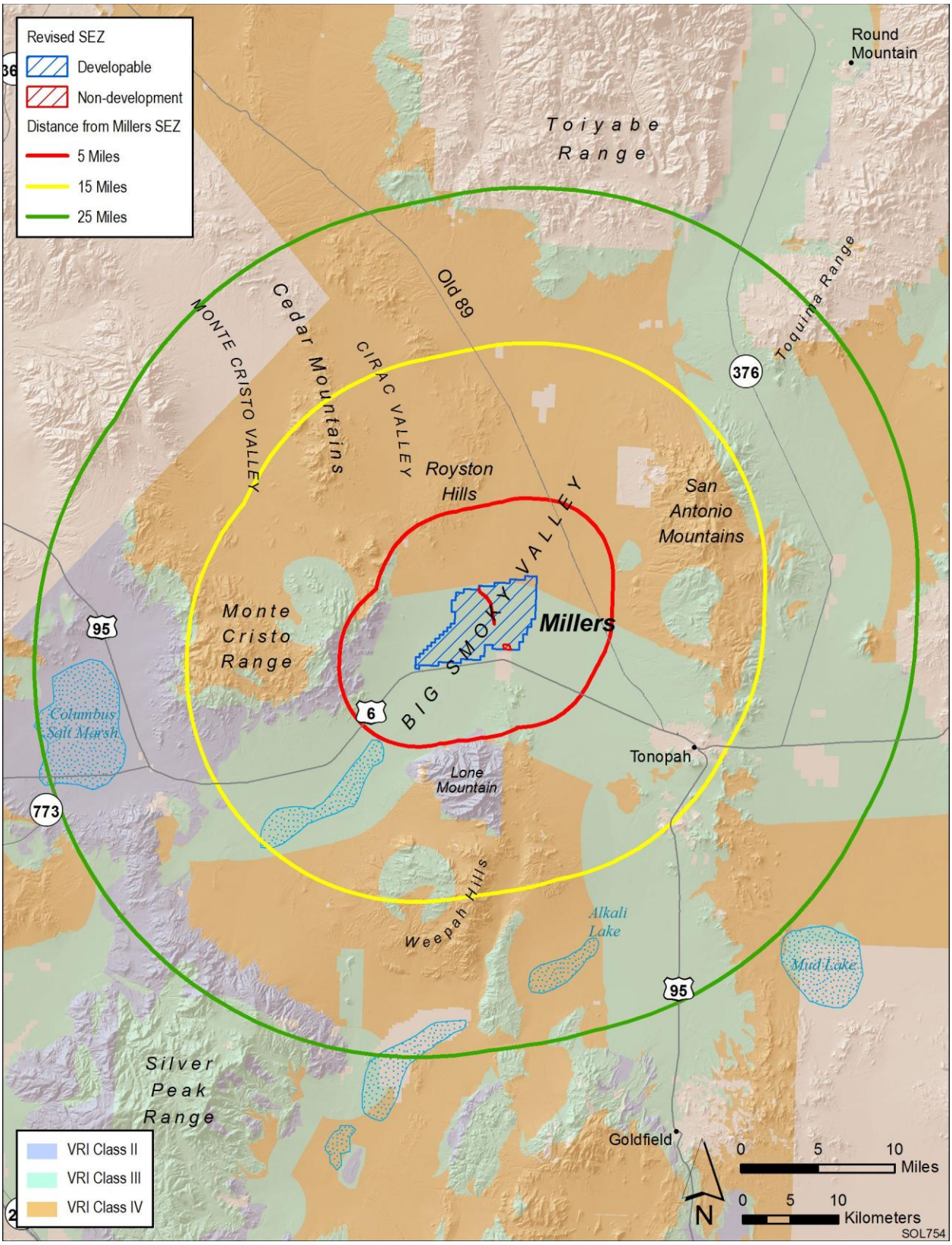

FIGURE 11.7.14.1-1 Visual Resource Inventory Values for the Proposed Millers SEZ as Revised

The SEZ is in an area of low scenic quality. Residents of Tonopah and nearby areas, workers, and visitors to the area may experience visual impacts from solar energy facilities located within the SEZ (as well as from any associated access roads and transmission lines) as they travel area roads. The residents nearest to the SEZ could be subjected to large visual impacts from solar energy development within the SEZ. In addition, U.S. 6 passes very close to the SEZ, and travelers on that road could be subjected to strong visual contrasts from solar development within the SEZ, but typically their exposure would be brief. Utility-scale solar energy development within the proposed Millers SEZ could cause weak levels of visual contrast for some residents of Tonopah, generally for persons in the westernmost parts of the community.

11.7.14.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on visual resources are described in Section A.2.2 of Appendix A of this Final Solar PEIS. While application of the programmatic design features would reduce potential visual impacts somewhat, the degree of effectiveness of these design features can only be assessed at the site- and project-specific level. Given the large scale, reflective surfaces, and strong regular geometry of utility-scale solar energy facilities and the lack of screening vegetation and landforms within the SEZ viewshed, siting the facilities away from sensitive visual resource areas and other sensitive viewing areas would be the primary means of mitigating visual impacts. The effectiveness of other visual impact mitigation measures generally would be limited.

On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, no SEZ-specific design features to address impacts on visual resources in the Millers SEZ have been identified in this Final Solar PEIS. Some SEZ-specific design features may be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

11.7.15 Acoustic Environment

11.7.15.1 Affected Environment

The developable area of the proposed Millers SEZ was reduced by about 2% from 16,787 acres (67.9 km^2) to 16,534 acres (66.9 km^2); the boundaries of the SEZ were not changed, and thus the information for affected environment remains the same as presented in the Draft Solar PEIS.

11.7.15.2 Impacts

11.7.15.2.1 Construction

Since the boundaries of the proposed Millers SEZ remain unchanged and the reduction of the developable area is small, the noise impacts from solar development in the proposed Millers

SEZ remain the same as presented in the Draft Solar PEIS. Construction within the SEZ would cause negligible unavoidable, but localized, short-term noise impacts on the nearest residences located more than 10 mi (16 km) north and east–southeast of the SEZ. No adverse vibration impacts are anticipated from construction activities, including pile driving for dish engines.

11.7.15.2.2 Operations

The conclusions presented in the Draft Solar PEIS remain valid. Even if TES were used, operating parabolic trough or power tower facilities would result in minimal adverse noise impacts on the nearest residences. The noise levels would also depend on background noise levels and meteorological conditions.

Potential noise impacts on the nearest residences from operating dish engines would be expected to be minimal with predicted noise levels well below the EPA guideline of 55 dBA L_{dn}.

Small changes in the developable area of the proposed SEZ would not affect the discussions of vibration, transformer and switchyard noise, and transmission line corona discharge presented in the Draft Solar PEIS. Noise impacts from these sources would be negligible.

11.7.15.2.3 Decommissioning and Reclamation

The conclusions presented in the Draft Solar PEIS remain valid. Decommissioning and reclamation activities would be of short duration, and their potential noise impacts would be minimal and temporary.

11.7.15.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce noise impacts are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the programmatic design features will provide some protection from noise impacts.

On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, no SEZ-specific design features to address noise impacts in the Millers SEZ are required. Some SEZ-specific design features may be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

11.7.16 Paleontological Resources

11.7.16.1 Affected Environment

Data provided in the Draft Solar PEIS remain valid, with the following updates:

- The playa deposits in the southern portion of the SEZ are now designated as non-developable areas.

- The BLM Regional Paleontologist may have additional information regarding the paleontological potential of the SEZ and be able to verify the PFYC of the SEZ as Class 2 and 3b as used in the Draft Solar PEIS.

11.7.16.2 Impacts

The assessment provided in the Draft Solar PEIS remains valid. The potential for impacts in most of the SEZ is unknown, but may be potentially high in some areas. A more detailed look at the geological deposits of the SEZ is needed to determine whether a paleontological survey is warranted.

11.7.16.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on paleontological resources are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Impacts would be minimized through the implementation of required programmatic design features, including a stop-work stipulation in the event that paleontological resources are encountered during construction, as described in Section A.2.2 of Appendix A.

On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, no SEZ-specific design features for paleontological resources have been identified. If the geological deposits for 6% of the SEZ are determined to be consistent with a classification of PFYC Class 2, mitigation of paleontological resources in the alluvial deposits would not likely be necessary. The need for and nature of SEZ-specific design features for 94% of the proposed Millers SEZ would depend on the results of future paleontological investigations. Some SEZ-specific design features may be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

As additional information on paleontological resources (e.g., from regional paleontologists or from new surveys) becomes available, the BLM will post the data to the project Web site (http://solareis.anl.gov) for use by applicants, the BLM, and other stakeholders.

11.7.17 Cultural Resources

11.7.17.1 Affected Environment

Data provided in the Draft Solar PEIS remain valid, with the following updates:

- A tribally approved ethnographic study of the proposed Millers SEZ and surrounding area was conducted (SWCA and University of Arizona 2011), and a summary of that study was presented in the Supplement to the Draft Solar PEIS. A number of new potential sites, new cultural landscapes, important water sources, and traditional plants and animals were identified as a result of this study (see Section 11.7.18 for a description of the latter). The completed ethnographic study is available in its entirety on the Solar PEIS Web site (http://solareis.anl.gov).

- Water sources important to the Duckwater and Timbisha Shoshone in the Millers SEZ and surrounding area include Pleistocene Lake Tonopah, Peavine Creek, Ione Wash, Cloverdale Creek, and Darrough's Hot Spring.

- Geological features important to the Duckwater and Timbisha Shoshone in the Millers SEZ and surrounding area include the entire Big Smoky Valley, Lone Mountain, the Toiyabe Range, the Toquima Range, the Monte Cristo Range, Weepah Hills, and Royston Hills.

- During a site visit to the proposed Millers SEZ, tribal representatives identified a projectile point and several areas of flaked stone within the SEZ. It is unknown whether these artifacts represented previously recorded sites or whether they were new finds.

- Additional information may be available to characterize the area surrounding the proposed SEZ in the future (after the Final Solar PEIS is completed), as follows:
  - Results of a Class I literature file search to better understand (1) the site distribution pattern in the vicinity of the SEZ, (2) trail networks through existing ethnographic reports, and (3) overall cultural sensitivity of the landscape.
  - Results of a Class II reconnaissance-level stratified random sample survey of 827 acres (3.3 km^2) or roughly 5% of the SEZ. The Class II survey is being conducted by the BLM to meet its ongoing Section 110 responsibilities under the NHPA. The objectives of the Class II surveys currently under contract are to reliably predict the density, diversity, and distribution of archaeological sites within each SEZ in Arizona, California, and Nevada and create sensitivity zones based on projected site density, complexity, likely presence of human burials, and/or other tribal concerns. The BLM will continue to request funding to support additional Class II sample inventories in the SEZ areas. Areas of interest, such as dune areas and along washes, as determined through a Class I review, and, if appropriate, subsurface testing of dune and/or colluvium areas should be considered in sampling strategies for future surveys.
  - Continuation of government-to-government consultation as described in Section 2.4.3 of the Supplement to the Draft Solar PEIS and IM 2012-032 (BLM 2011c), including follow-up to recent ethnographic studies covering

some SEZs in Nevada and Utah with tribes not included in the original studies to determine whether those tribes have similar concerns.

11.7.17.2 Impacts

As stated in the Draft Solar PEIS, direct impacts on significant cultural resources could occur in the proposed Millers SEZ; however, further investigation is needed. Impacts on cultural resources are possible in the dune areas associated with Lake Tonopah, as well as areas associated with the Millers town site.

11.7.17.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on cultural resources are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Programmatic design features assume that the necessary surveys, evaluations, and consultations will occur.

On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, the following SEZ-specific design feature for cultural resources has been identified:

- Areas with a high potential for containing significant cultural resources or with a high density of cultural resources should be avoided. However, because of the high likelihood that the area contains prehistoric sites associated with Lake Tonopah and the presence of historic period sites related to the development of the Millers town site, complete avoidance of NRHP-eligible sites may not be possible. In particular, it may not be possible to fully mitigate the loss of such a large number of sites associated with one Pleistocene lake system.

Additional SEZ-specific design features would be determined in consultation with the Nevada SHPO and affected tribes and would depend on the results of future investigations. Some SEZ-specific design features may be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

11.7.18 Native American Concerns

11.7.18.1 Affected Environment

Data provided in the Draft Solar PEIS remain valid, with the following updates:

- A tribally approved ethnographic study of the proposed Millers SEZ was conducted (SWCA and University of Arizona 2011), and a summary of that

study was presented in the Supplement to the Draft Solar PEIS. A number of new potential sites, new cultural landscapes, important water sources, and traditional plants and animals were identified as a result of this study. The completed ethnographic study is available in its entirety on the Solar PEIS Web site (http://solareis.anl.gov).

- The tribal representatives from both the Duckwater and Timbisha Shoshone Tribes believe that all the cultural resources and landscapes within the proposed Millers SEZ are important in helping both tribes to understand their past, present, and future.

- Crescent Dunes has been identified as an important landscape feature, a geological anomaly known as "singing dunes." According to tribal representatives, the Crescent Dunes have a great deal of *Puha* (or power) and their ancestors would gather there for ceremonies.

- Tribal representatives of the Duckwater and Timbisha Shoshone Tribes maintain that the Big Smoky Valley connects the people to the surrounding mountains, valleys, and water sources. Areas of particular importance are the Toiyabe and Toquima Ranges, which are associated with origin stories for staple foods such as pine nuts and fish. Seasonal festivals, called Fandangos, were held in Big Smoky Valley as well.

- Geological features identified by tribal representatives as possessing cultural importance include Lone Mountain, the Monte Cristo Range, Weepah Hills, and Royston Hills.

- Late Pleistocene Lake Tonopah, Ione Wash, Peavine Creek, and Cloverdale Creek were identified as important water sources to the Shoshone.

- The following traditional plants have been identified in addition to those listed in Table 11.7.18.1-2 of the Draft Solar PEIS: bud sagebrush (*Picrothamnus desertorum*), desert prince's plume/Indian spinach (*Stanleya pinnata*), desert trumpet (*Eriogonum inflatum*), Douglas rabbitbrush (*Chrysothamnus viscidiflorus*), dune evening primrose (*Oenothera deltoides*), horsebrush (*Tetradymia* sp.), Mojave seablite (*Suaeda moquinii*), Nevada smokebush (*Psorathamnus polydenius*), orange lichen (*Caloplaca trachyphylla*), rubber rabbitbrush (*Ericameria nauseosa*), shadscale (*Atriplex confertifolia*), silver cholla (*Opuntia echinocarpa*), spiny hopsage (*Grayia spinosa*), spiny menodora (*Menodora spinescens*), Whipple's cholla (*Opuntia whipplei*), and wolfberry (*Lycium* sp.).

- The following traditional animals have been identified in addition to those listed in Table 11.7.18.1-3 of the Draft Solar PEIS: bobcat (*Lynx sp.*), Cougar (*Puma concolor*), mule deer (*Odocoileus hemionus*), pronghorn antelope (*Antilocarpa Americana*), American kestrel (*Falco sparverius*), Gambel's

quail (*Callipepla gambelii*), greater roadrunner (*Geococcyx californianus*), horned lark (*Eremophilia alpestris*), killdeer (*Charadrius vociferous*), mourning dove (*Zenaida macroura*), nighthawk (*Chardeiles* sp.), and turkey vulture (*Carhartes aura*).

11.7.18.2 Impacts

The following summary of potential concerns provided in the Draft Solar PEIS remains valid. In the past, the Western Shoshone and Owens Valley Paiutes have expressed concern over project impacts on a variety of resources. While no comments specific to the proposed Millers SEZ have been received from Native American tribes to date, in comments on the scope of the Solar PEIS, the Big Pine Paiute Tribe of the Owens Valley has recommended that the BLM preserve undisturbed lands intact and that recently disturbed lands, such as abandoned farm fields, rail yards, mines, and airfields, be given primary consideration for solar energy development. Potential impacts on existing water supplies were also stated to be a primary concern. The construction of utility-scale solar energy facilities within the proposed SEZ would almost certainly result in the destruction of some plants important to Native Americans and the habitat of some traditionally important animals.

In addition to the impacts discussed in the Draft Solar PEIS, the ethnographic study conducted for the proposed Millers SEZ identified the following impacts:

- Development within the proposed Millers SEZ will result in visual impacts on Crescent Dunes and interfere with views of Lone Mountain, the Monte Cristo Range, the Toyiabe Range, and the Toquima Range from the location of the proposed SEZ.

- Development of a project area within the SEZ will directly affect culturally important plant and animal resources, because it will likely require the grading of the project area, removal of vegetation, and the destruction of burrows, nests, and migratory habitat.

- OHV use, nonvehicular recreational activities such as hiking, and cattle ranching have been identified by tribal representatives as current impacts on cultural resources, cultural landscapes, traditionally important plants and animals, and water sources in the SEZ and surrounding area (SWCA and University of Arizona 2011).

11.7.18.3 SEZ-Specific Design Features and Design Feature Effectiveness

Tribal representatives believe that solar energy development within the proposed Millers SEZ will adversely affect identified and unidentified archaeological resources, water sources, geological features associated with the Big Smoky Valley, and traditional plant, mineral, and animal resources (SWCA and University of Arizona 2011). Required programmatic design

features that would reduce impacts on Native American concerns are described in Section A.2.2 of Appendix A of this Final Solar PEIS. For example, impacts would be minimized through the avoidance of sacred sites, water sources, and tribally important plant and animal species. Programmatic design features require that the necessary surveys, evaluations, and consultations would occur. The tribes would be notified regarding the results of archaeological surveys, and they would be contacted immediately upon the discovery of Native American human remains and associated cultural items.

On the basis of the impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, no SEZ-specific design features to address Native American concerns have been identified. The need for and nature of SEZ-specific design features would be determined during government-to-government consultation with the affected tribes as part of the process of preparing parcels for competitive offer and subsequent project-specific analysis. Potential culturally significant sites and landscapes in the vicinity of the SEZ associated with the Big Smoky Valley, Crescent Dunes, and other nearby geologic features, water sources, and sites and landscapes associated with Lake Tonopah, as well as plant and animal resources, should be considered and discussed during consultations.

11.7.19 Socioeconomics

11.7.19.1 Affected Environment

The boundaries of the proposed Millers SEZ have not changed. The socioeconomic ROI, the area in which site employees would live and spend their wages and salaries and into which any in-migration would occur, includes the same counties and communities as described in the Draft Solar PEIS, meaning that no updates to the affected environment information given in the Draft Solar PEIS are required.

11.7.19.2 Impacts

Socioeconomic resources in the ROI around the SEZ could be affected by solar energy development through the creation of direct and indirect employment and income, the generation of direct sales and income taxes, SEZ acreage rental and capacity payments to BLM, the in-migration of solar facility workers and their families, and impacts on local housing markets and on local community service employment. Since the boundaries of the proposed Millers SEZ remain unchanged and the reduction of the developable area is small (less than 2%), the impacts estimated in the Draft Solar PEIS remain valid. During construction, between 346 and 4,578 jobs and between $21 million and $278 million in income could be associated with solar development in the SEZ. During operations at full build-out, between 35 and 773 jobs and between $1.1 million and $26 million in income could be produced. In-migration of workers and their families would mean between 95 and 1,262 rental housing units would be needed during construction, and between 11 and 228 owner-occupied units during operations.

11.7.19.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce socioeconomic impacts are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the programmatic design features would reduce the potential for socioeconomic impacts during all project phases.

On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, no SEZ-specific design features to address socioeconomic impacts have been identified for the proposed Millers SEZ. Some SEZ-specific design features may be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

11.7.20 Environmental Justice

11.7.20.1 Affected Environment

The data presented in the Draft Solar PEIS for the proposed Millers SEZ have not substantially changed. There are no minority or low-income populations in the Nevada or California portions of the 50-mi (80-km) radius of the SEZ.

11.7.20.2 Impacts

Potential impacts (e.g., from noise and dust during construction and operations, visual impacts, cultural impacts, and effects on property values) on low-income and minority populations could be incurred as a result of the construction and operation of solar facilities involving each of the four technologies. Impacts are likely to be small, because no minority populations defined by CEQ guidance (CEQ 1997) are within the 50-mi (80-km) radius around the boundary of the SEZ. That is, any adverse impacts of solar projects could not disproportionately affect minority populations. Because there are no low-income populations within the 50-mi (80-km) radius, there could be no impacts on low-income populations.

11.7.20.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce potential environmental justice impacts are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the programmatic design features will reduce the potential for such impacts.

On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, no SEZ-specific design features for environmental justice impacts have been identified. Some SEZ-specific design features may ultimately be identified

through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

11.7.21 Transportation

11.7.21.1 Affected Environment

The reduction of less than 2% in the developable area of the proposed Millers SEZ does not change the information on affected environment for transportation provided in the Draft Solar PEIS.

11.7.21.2 Impacts

As stated in the Draft Solar PEIS, the primary transportation impacts are anticipated to be from commuting worker traffic. Single projects could involve up to 1,000 workers each day with an additional 2,000 vehicle trips per day (maximum), or possibly 4,000 vehicle trips per day if two larger projects were to be developed at the same time. The volume of traffic on U.S. 95 along the southern edge of the Millers SEZ would represent an increase in traffic of about 100 or 200% for one or two projects, respectively, should all traffic access the SEZ in that area.

Because higher traffic volumes would be experienced during shift changes, traffic on U.S. 95 would experience slowdowns during these time periods in the vicinity of access roads for projects in the SEZ. Local road improvements would be necessary on any portion of U.S. 95 that might be developed so as not to overwhelm the local access roads near any site access point(s).

Solar development within the SEZ would affect public access along OHV routes that are designated open and available for public use. Although open routes crossing areas granted ROWs for solar facilities could be redesignated as closed (see Section 5.5.1 of the Draft Solar PEIS), a programmatic design feature has been included under Recreation (Section A.2.2.6.1 of Appendix A) that requires consideration of replacement of lost OHV route acreage and of access across and to public lands.

11.7.21.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on transportation are described in Section A.2.2 of Appendix A of this Final Solar PEIS. The programmatic design features, including local road improvements, multiple site-access locations, staggered work schedules, and ride-sharing, would all provide some relief to traffic congestion on local roads leading to the SEZ. Depending on the location of solar facilities within the SEZ, more specific access locations and local road improvements could be implemented.

On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of comments received as applicable, no SEZ-specific design features to address transportation impacts in the proposed Millers SEZ have been identified. Some SEZ-specific design features may be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

11.7.22 Cumulative Impacts

The analysis of potential impacts in the vicinity of the proposed Millers SEZ presented in the Draft Solar PEIS is still generally applicable for this Final Solar PEIS. The size of the developable area of the proposed SEZ has been reduced by less than 2%. The following sections include an update to the information presented in the Draft Solar PEIS regarding cumulative effects for the proposed Millers SEZ.

11.7.22.1 Geographic Extent of the Cumulative Impact Analysis

The geographic extent of the cumulative impact analysis has not changed. The extent varies based on the nature of the resource being evaluated and the distance at which the impact may occur (e.g., impacts on air quality may have a greater geographic extent than impacts on visual resources). The BLM, USFS, and DoD administer most of the land around the SEZ; there are also some tribal lands nearby at the Yomba Reservation 48 mi (77 km) to the north of the SEZ. The BLM administers approximately 77% of the lands within a 50-mi (80-km) radius of the SEZ.

11.7.22.2 Overview of Ongoing and Reasonably Foreseeable Future Actions

The Draft Solar PEIS included six other proposed SEZs in Nevada. Two of these, Delamar Valley and East Mormon Mountain, have been removed from consideration.

The list of reasonably foreseeable future actions that relate to energy production and distribution near the proposed Millers SEZ has been updated and is presented in Table 11.7.22.2-1. Projects listed in the table are shown in Figure 11.7.22.2-1.

Other major ongoing and foreseeable actions within 50 mi (80 km) of the proposed Millers SEZ have been updated and are listed in Table 11.7.22.2-2.

11.7.22.3 General Trends

The information on general trends presented in the Draft Solar PEIS remains valid.

TABLE 11.7.22.2-1 Ongoing and Reasonably Foreseeable Future Actions Related to Energy Development and Distribution near the Proposed Millers SEZ as Revised[a]

Description	Status	Resources Affected	Primary Impact Location
Fast-Track Solar Energy Projects on BLM-Administered Land			
Crescent Dunes Solar Energy Project (NVN-86292); **110 MW**, solar tower, **1,620 acres**[b]	**ROD December 20, 2010[c], under Construction**	Terrestrial habitats, wildlife, vegetation, water, soils, cultural, visual, aviation, and land use	3 mi[d] east of the SEZ
Renewable Energy Development			
Darrough Hot Springs Geothermal Leasing Project; 27 MW, 160 acres	ROD August 18, 2009	Terrestrial habitats, wildlife	45 mi north of the SEZ
Transmission and Distribution Systems			
None			

[a] Projects with status changed from that given in the Draft Solar PEIS are shown in bold text.

[b] To convert to km^2, multiply by 0.004047.

[c] See BLM (2010a) for details.

[d] To convert mi to km, multiply by 1.6093.

11.7.22.4 Cumulative Impacts on Resources

Total disturbance in the proposed Millers SEZ over 20 years is assumed to be up to about 13,227 acres (53.5 km^2) (80% of the entire proposed SEZ). This development would contribute incrementally to the impacts from other past, present, and reasonably foreseeable future actions in the region as described in the Draft Solar PEIS. Primary impacts from development in the Millers SEZ may include impacts on water quantity and quality, air quality, ecological resources such as habitat and species, cultural and visual resources, and to specially designated lands.

No additional major actions have been identified within 50 mi (80km) of the SEZ. Therefore, the incremental cumulative impacts associated with development in the proposed Millers SEZ during construction, operation, and decommissioning are expected to be the same as those projected in the Draft Solar PEIS.

11.7.23 Transmission Analysis

The methodology for this transmission analysis is described in Appendix G of this Final Solar PEIS. This section presents the results of the transmission analysis for the Millers SEZ,

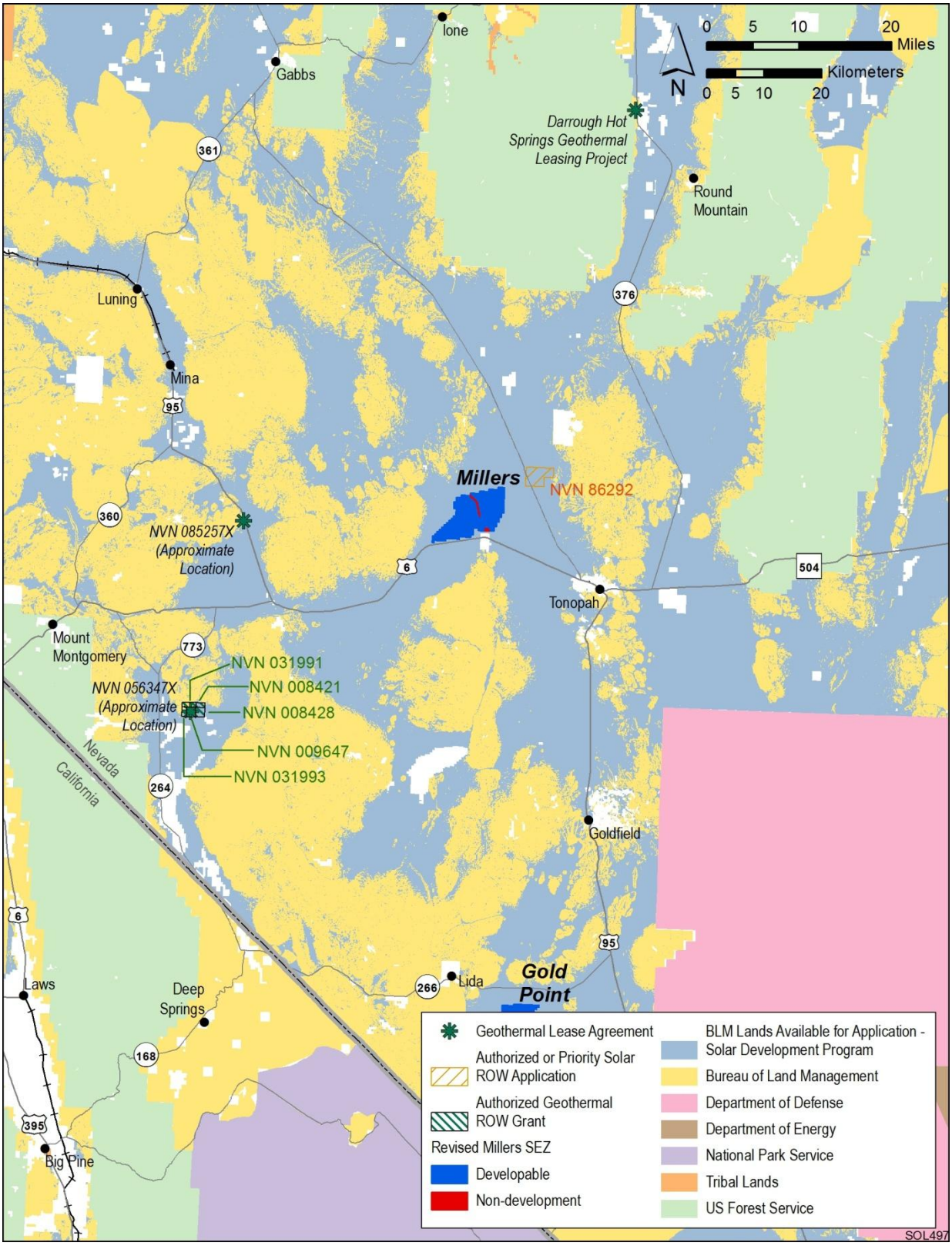

FIGURE 11.7.22.2-1 Locations of Existing and Reasonably Foreseeable Renewable Energy Projects on Public Land with a 50-mi (80-km) Radius of the Proposed Millers SEZ as Revised

TABLE 11.7.22.2-2 Other Major Actions near the Proposed Millers SEZ as Revised[a]

Description	Status	Resources Affected	Primary Impact Location
Caliente Rail Realignment	FEIS June 2008	Terrestrial habitats, wildlife cultural resources	24 mi[b] southeast of the SEZ
Chemetall Foote Lithium Carbonate Facility Expansion	**FONSI September 22, 2010[c]**	Terrestrial habitats, wildlife, air quality	30 mi south of the SEZ
Five Producing Geothermal Leases: NVN 8421, 8428, 9647, 31991, and 31993	Operating	Terrestrial habitats, wildlife	32 mi southwest of the SEZ
Mineral Ridge Project	**EA Amendment August 2011[d]; mining operations have started[e]**	Terrestrial habitats, groundwater, air quality	28 mi south of the SEZ
Montezuma Peak HMA and Paymaster HMA Wild Horse and Burro Gather	**Completed[f]**	Terrestrial habitats, wildlife	32 mi and 8 mi southeast of the SEZ
Round Mountain Mine Expansion; **4,698 acres[g] new surface disturbance[h]**	**ROD June 30, 2010[h]; expansion has started**	Terrestrial habitats, wildlife, cultural resources	45 mi north of the SEZ

[a] Projects with status changed from that given in the Draft Solar PEIS are shown in bold text.

[b] To convert mi to km, multiply by 1.6093.

[c] See Chemetall (2010) for details.

[d] See BLM (2011d) for details.

[e] See Golden Phoenix Minerals (2011) for details.

[f] See BLM (2010c) for details.

[g] To convert acres to km^2, multiply by 0.004047.

[h] See BLM (2010b) for details.

including the identification of potential load areas to be served by power generated at the SEZ and the results of the DLT analysis. Unlike Sections 11.7.2 through 11.7.22, this section is not an update of previous analysis for the Millers SEZ; this analysis was not presented in the Draft Solar PEIS. However, the methodology and a test case analysis were presented in the Supplement to the Draft Solar PEIS. Comments received on the material presented in the Supplement were used to improve the methodology for the assessment presented in this Final Solar PEIS.

The Millers SEZ represents one of the more complex cases because of its potential to generate a large amount of solar power. On the basis of its size, the assumption of a minimum of 5 acres (0.02 km^2) of land required per MW, and the assumption of a maximum of 80% of the land area developed, the Millers SEZ is estimated to have the potential to generate 2,645 MW of marketable solar power at full build-out.

11.7.23.1 Identification and Characterization of Load Areas

The primary candidates for Millers SEZ load areas are the major surrounding cities. Figure 11.7.23.1-1 shows the possible load areas for the Millers SEZ and the estimated portion of their market that could be served by solar generation. Possible load areas for the Millers SEZ include Phoenix and Tucson, Arizona; Salt Lake City, Utah; Las Vegas and Reno, Nevada; and San Diego, Los Angeles, San Jose, San Francisco, Oakland, and Sacramento, California.

The two load area groupings examined for the Millers SEZ are as follows:

1. Los Angeles, California; and

2. Reno, Nevada; Sacramento, Oakland, and San Francisco, California; and Las Vegas, Nevada.

Figure 11.7.23.1-2 shows the most economically viable transmission scheme for the Millers SEZ (transmission scheme 1), and Figure 11.7.23.1-3 shows an alternative transmission scheme (transmission scheme 2) that represents a logical choice should transmission scheme 1 be infeasible. As described in Appendix G, the alternative shown in transmission scheme 2 represents the optimum choice if one or more of the primary linkages in transmission scheme 1 are excluded from consideration. The groups provide for linking loads along alternative routes so that the SEZ's output of 2,645 MW could be fully allocated.

Table 11.7.23.1-1 summarizes and groups the load areas according to their associated transmission scheme and provides details on how the megawatt load for each area was estimated.

11.7.23.2 Findings for the DLT Analysis

The DLT analysis approach assumes that the Millers SEZ will require all new construction for transmission lines (i.e., dedicated lines) and substations. The new transmission lines(s) would directly convey the 2,645-MW output of the Millers SEZ to the prospective load areas for each possible transmission scheme. The approach also assumes that all existing transmission lines in the WECC region are saturated and have little or no available capacity to accommodate the SEZ's output throughout the entire 10-year study horizon.

Figures 11.7.23.1-2 and 11.7.23.1-3 display the pathways that new dedicated lines might follow to distribute solar power generated at the Millers SEZ via the two identified transmission schemes described in Table 11.7.23.1-1. These pathways parallel existing 500-kV, 230-kV, and

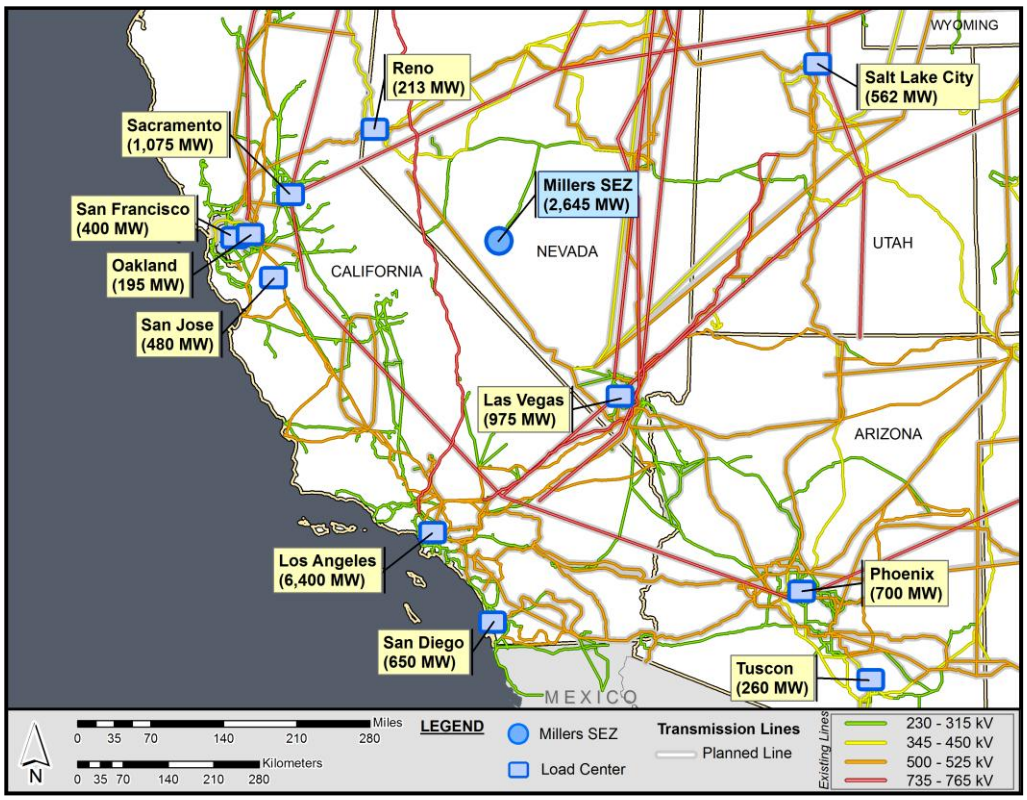

FIGURE 11.7.23.1-1 Location of the Proposed Millers SEZ and Possible Load Areas (Source for background map: Platts 2011)

lower voltage lines. The intent of following existing lines is to avoid pathways that may be infeasible due to topographical limitations or other concerns.

For transmission scheme 1, a new line would be constructed to connect with Los Angeles (6,400 MW), so that the 2,645-MW output of the Millers SEZ could be fully utilized (Figure 11.7.23.1-2). This particular scheme has two segments. The first segment extends about 30 mi (48 km) to the southwest from the SEZ to the switching station located at the corridor of the existing 345-kV line. On the basis of engineering and operational considerations, this segment would require a double-circuit 765-kV (2-765 kV) bundle of four conductors (Bof4) transmission line design. The second segment runs from the switching station to Los Angeles over a distance of about 294 mi (473 km).The transmission configuration options were determined by using the line "loadability" curve provided in American Electric Power's *Transmission Facts* (AEP 2010). Appendix G documents the line options used for this analysis and describes how the load area groupings were determined.

For transmission scheme 2, serving load centers to the northwest, west, and southeast, Figure 11.7.23.1-3 shows that new lines would be constructed to connect with Reno (213 MW), Sacramento (1,075 MW), Oakland (195 MW), San Francisco (400 MW), and Las Vegas (975 MW), so that the 2,645-MW output of the Millers SEZ could be fully utilized. This scheme

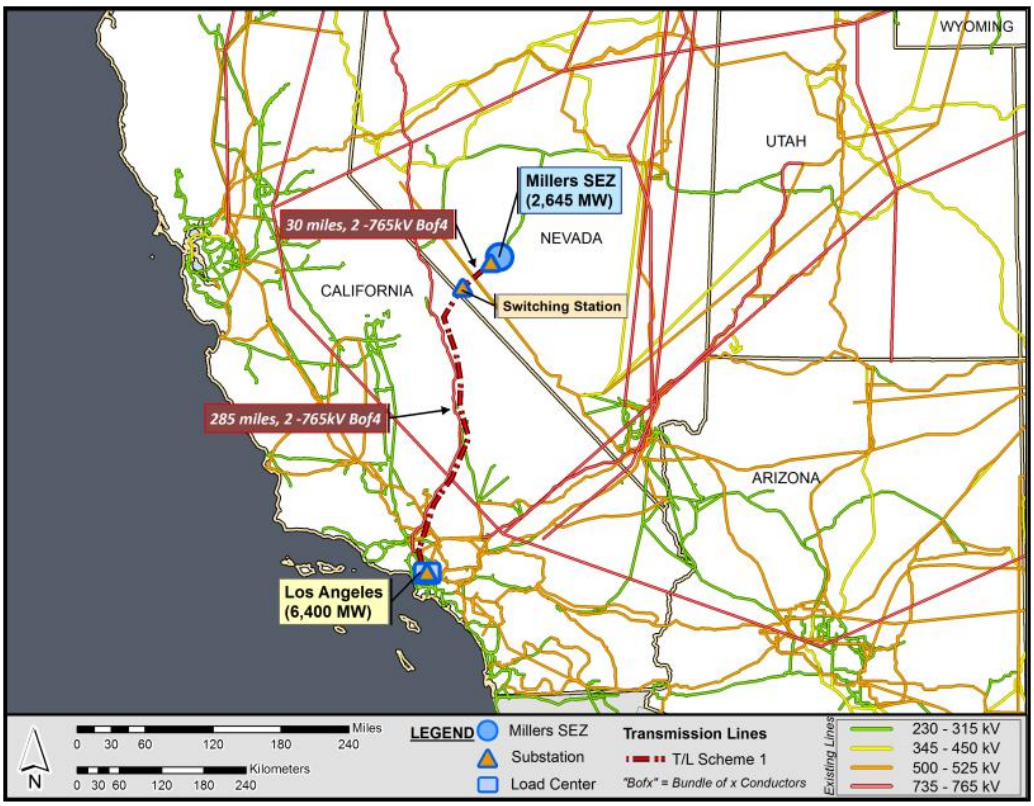

FIGURE 11.7.23.1-2 Transmission Scheme 1 for the Proposed Millers SEZ (Source for background map: Platts 2011)

has seven segments. The first segment extends 30 mi (48 km) to the southwest from the SEZ to the first switching station. The second segment runs to Reno (213 MW) over a distance of about 186 mi (299 km). This segment would require a double-circuit 500-kV (2-500 kV) bundle of three (Bof3) conductors transmission line design. The third segment runs about 104 mi (167 km) west from Reno to a switching station located just north of the Sacramento area, while the fourth segment extends from the switching station south about 23 mi (37 km) to Sacramento (1,075 MW). The fifth segment traverses a distance of about 98 mi (158 km) and links the Sacramento switching station to Oakland. The sixth line crosses a 12-mi (19-km) body of water via an existing bridge to serve loads in San Francisco. The seventh and final segment connects the first switching station near the SEZ to Las Vegas over a distance of about 200 mi (322 km).

Table 11.7.23.2-1 summarizes the distances to the various load areas over which new transmission lines would need to be constructed, as well as the assumed number of substations that would be required. One substation is assumed to be installed at each load area and an additional one at the SEZ. Thus, in general, the total number of substations per scheme is simply equal to the number of load areas associated with the scheme plus one. Substations at the load areas could consist of one or more step-down transformers, while the originating substation at the SEZ would consist of several step-up transformers. The originating substation would have a rating of at least 2,645 MW (to match the plant's output), while the combined load substations would have a similar total rating of 2,645 MW. For schemes that require branching of the lines,

FIGURE 11.7.23.1-3 Transmission Scheme 2 for the Proposed Millers SEZ (Source for background map: Platts 2011)

TABLE 11.7.23.1-1 Candidate Load Area Characteristics for the Proposed Millers SEZ

Transmission Scheme	City/Load Area Name	Position Relative to SEZ	2010 Population[c]	Estimated Total Peak Load (MW)	Estimated Peak Solar Market (MW)
1	Switching Stations	Southwest	0	0	0
	Los Angeles, California[a]	Southwest	12,800,000	32,000	6,400
2	Switching Stations	Southwest	0	0	0
	Reno, Nevada[a]	Northwest	425,000	1,063	213
	Sacramento, California[a]	West	2,150,000	5,375	1,075
	San Francisco, California[b]	West	800,000	2,000	400
	Oakland, California[b]	West	390,000	975	195
	Las Vegas, Nevada[a]	Southeast	1,950,000	4,875	975

[a] The load area represents the metropolitan area (i.e., the identified city plus adjacent communities).

[b] The load area represents the city named.

[c] City and metropolitan area population data are from 2010 Census data (U.S. Bureau of the Census 2010).

TABLE 11.7.23.2-1 Potential Transmission Schemes, Estimated Solar Markets, and Distances to Load Areas for the Proposed Millers SEZ

Transmission Scheme	City/Load Area Name[a]	Estimated Peak Solar Market (MW)[c]	Total Solar Market (MW)	Sequential Distance (mi)[d]	Total Distance (mi)[d]	Line Voltage (kV)	No. of Substations
1	Switching Stations	0	6,400	30	324	765	3
	Los Angeles, California[a]	6,400		294			
2	Switching Stations	0	2,858	30	652	500, 345,	8
	Reno, Nevada[a]	213		186		230	
	Sacramento, California[a]	1,075		127			
	San Francisco, California[b]	400		12			
	Oakland, California[b]	195		98			
	Las Vegas, Nevada[a]	975		199			

[a] The load area represents the metropolitan area (i.e., the identified city plus adjacent communities).

[b] The load area represents the city named.

[c] From Table 11.7.23.1-1.

[d] To convert mi to km, multiply by 1.6093.

a switching substation is assumed to be constructed at the appropriate junction. In general, switching stations carry no local load but are assumed to be equipped with switching gears (e.g., circuit breakers and connecting switches) to reroute power as well as, in some cases, with additional equipment to regulate voltage.

Table 11.7.23.2-2 provides an estimate of the total land area disturbed for construction of new transmission facilities under each of the schemes evaluated. The most favorable transmission scheme with respect to minimizing costs and the area disturbed would be scheme 1, which would serve Los Angeles. This scheme is estimated to potentially disturb about 7,982 acres (32.3 km^2) of land. The less favorable transmission scheme with respect to minimizing costs and the area disturbed would be scheme 2, which serves multiple load areas in California and Las Vegas. For this scheme, the construction of new transmission lines and substations is estimated to disturb a land area on the order of 14,924 acres (60.4 km^2).

Table 11.7.23.2-3 shows the estimated NPV of both transmission schemes and takes into account the cost of constructing the lines, the substations, and the projected revenue stream over the 10-year horizon. A positive NPV indicates that revenues more than offset investments. This calculation does not include the cost of producing electricity.

The most economically attractive configuration (transmission scheme 1) has the highest positive NPV and serves Los Angeles. The secondary case (transmission scheme 2), which excludes one or more of the primary pathways used in scheme 1, is less economically attractive

TABLE 11.7.23.2-2 Comparison of the Various Transmission Line Configurations with Respect to Land Use Requirements for the Proposed Millers SEZ

Transmission Scheme	City/Load Area Name	Total Distance (mi)[c]	No. of Substations	Land Use (acres)[d]		
				Transmission Line	Substation	Total
1	Switching Stations Los Angeles, California[a]	324	3	7,854.5	126.9	7,981.5
2	Switching Stations Reno, Nevada[a] Sacramento, California[a] San Francisco, California[b] Oakland, California[b] Las Vegas, Nevada[a]	652	8	14,763.6	160.2	14,923.8

[a] The load area represents the metropolitan area (i.e., the identified city plus adjacent communities).

[b] The load area represents the city named.

[c] To convert mi to km, multiply by 1.6093.

[d] To convert acres to km^2, multiply by 0.004047.

TABLE 11.7.23.2-3 Comparison of Potential Transmission Lines with Respect to NPV (Base Case) for the Proposed Millers SEZ

Transmission Scheme	City/Load Area Name	Present Value Transmission Line Cost ($ million)	Present Value Substation Cost ($ million)	Annual Sales Revenue ($ million)	Present Worth of Revenue Stream ($ million)	NPV ($ million)
1	Switching Stations Los Angeles, California[a]	1,822	174.6	463.4	3,578.3	1,581.2
2	Switching Stations Reno, Nevada[a] Sacramento, California[a] San Francisco, California[b] Oakland, California[b] Las Vegas, Nevada[a]	2,085.9	174.6	463.4	3,578.3	1,317.8

[a] The load area represents the metropolitan area (i.e., the identified city plus adjacent communities).

[b] The load area represents the city named.

and serves several markets. For the assumed utilization factor of 20%, both options exhibit positive NPVs, implying varying degrees of economic viability under the current assumptions.

Table 11.7.23.2-4 shows the effect of varying the value of the utilization factor on the NPV of the various transmission schemes. It also shows that as the utilization factor is increased, the economic viability of the lines increases. Utilization factors can be raised by allowing the new dedicated lines to market other power generation outputs in the region in addition to that of its associated SEZ.

The findings of the DLT analysis for the proposed Millers SEZ are as follows:

- Transmission scheme 1, which identifies Los Angeles as the primary market, represents the most favorable option based on NPV and land use requirements. This configuration would result in new land disturbance of about 7,982 acres (32.3 km^2).

- Transmission scheme 2, which represents an alternative configuration if Los Angeles is excluded, serves Reno, Sacramento, San Francisco, and Oakland. This configuration would result in new land disturbance of about 14,924 acres (60.4 km^2).

- Other load area configurations are possible but would be less favorable than scheme 1 in terms of NPV and, in most cases, also in terms of land use requirements. If new electricity generation at the proposed Millers SEZ is not sent to either of the two markets identified above, the potential upper-bound impacts in terms of cost would be greater.

TABLE 11.7.23.2-4 Effects of Varying the Utilization Factor on the NPV of the Transmission Schemes for the Proposed Millers SEZ

Transmission Scheme	City/Load Area Name	NPV ($ million) at Different Utilization Factors					
		20%	30%	40%	50%	60%	70%
1	Switching Stations Los Angeles, California[a]	1,581.2	3,370.4	5,159.5	6,948.6	8,737.8	10,526.9
2	Switching Stations Reno, Nevada[a] Sacramento, California[a] San Francisco, California[b] Oakland, California[b] Las Vegas, Nevada[a]	1,317.8	3,107.0	4,896.1	6,685.2	8,474.4	10,263.5

[a] The load area represents the metropolitan area (i.e., the identified city plus adjacent communities).

[b] The load area represents the city named.

- The analysis of transmission requirements for the proposed Millers SEZ indicates no reduction of impacts from increasing the solar-eligible load assumption for transmission scheme 1, which brings power to Los Angeles. Increasing the solar-eligible percentage would have no effect, because an adequate load area was identified under the 20% assumption that would accommodate all of the SEZ's capacity. Thus, line distances and voltages would not be affected by increasing the solar-eligible load assumption, and similarly the associated costs and land disturbance would not be affected. However, for transmission scheme 2, which serves Reno, Sacramento, San Francisco, and Oakland, increasing the assumed solar-eligible load assumption could result in lower cost and land disturbance estimates, because it is likely that fewer load areas would be needed to accommodate the SEZ's capacity.

11.7.24 Impacts of the Withdrawal

The BLM is proposing to withdraw 16,797 acres (67 km^2) of public land comprising the proposed Millers SEZ from settlement, sale, location, or entry under the general land laws, including the mining laws, for a period of 20 years (see Section 2.2.2.2.4 of the Final Solar PEIS). The public lands would be withdrawn, subject to valid existing rights, from settlement, sale, location, or entry under the general land laws, including the mining laws. This means that the lands could not be appropriated, sold, or exchanged during the term of the withdrawal, and new mining claims could not be filed on the withdrawn lands. Mining claims filed prior to the segregation or withdrawal of the identified lands would take precedence over future solar energy development. The withdrawn lands would remain open to the mineral leasing, geothermal leasing, and mineral material laws, and the BLM could elect to lease the oil, gas, coal, or geothermal steam resources, or to sell common-variety mineral materials, such as sand and gravel, contained in the withdrawn lands. In addition, the BLM would retain the discretion to authorize linear and renewable energy ROWs on the withdrawn lands.

The purpose of the proposed land withdrawal is to minimize the potential for conflicts between mineral development and solar energy development for the proposed 20-year withdrawal period. Under the land withdrawal, there would be no mining-related surface development, such as the establishment of open pit mining, construction of roads for hauling materials, extraction of ores from tunnels or adits, or construction of facilities to process the material mined, that could preclude use of the SEZ for solar energy development. For the Millers SEZ, the impacts of the proposed withdrawal on mineral resources and related economic activity and employment are expected to be negligible because the mineral potential of the lands within the SEZ is low (BLM 2012). There has been no documented mining within the SEZ, and there are no known locatable mineral deposits within the land withdrawal area. According to the LR2000 (accessed in May 2012), there are no recorded mining claims within the land withdrawal area.

Although the mineral potential of the lands within the Millers SEZ is low, the proposed withdrawal of lands within the SEZ would preclude many types of mining activity over a 20-year

period, resulting in the avoidance of potential mining related adverse impacts. Impacts commonly related to mining development include increased soil erosion and sedimentation, water use, generation of contaminated water in need of treatment, creation of lagoons and ponds (hazardous to wildlife), toxic runoff, air pollution, establishment of noxious weeds and invasive species, habitat destruction or fragmentation, disturbance of wildlife, blockage of migration corridors, increased visual contrast, noise, destruction of cultural artifacts and fossils and/or their context, disruption of landscapes and sacred places of interest to tribes, increased traffic and related emissions, and conflicts with other land uses (e.g., recreational).

11.7.25 References

Note to Reader: This list of references identifies Web pages and associated URLs where reference data were obtained for the analyses presented in this Final Solar PEIS. It is likely that at the time of publication of this Final Solar PEIS, some of these Web pages may no longer be available or their URL addresses may have changed. The original information has been retained and is available through the Public Information Docket for this Final Solar PEIS.

AEP (American Electric Power), 2010, *Transmission Facts*. Available at http://www.aep.com/about/transmission/docs/transmission-facts.pdf. Accessed July 2010.

BLM (Bureau of Land Management), 1997, *Tonopah Resource Management Plan and Record of Decision*, U.S. Department of the Interior, Battle Mountain District. Available at http://www.blm.gov/pgdata/etc/medialib/blm/nv/field_offices/battle_mountain_field/blm_information/nepa/rmp.Par.65317.File.dat/Tonopah%20RMP%20and%20Record%20of%20Decision%20-%20APPROVED.PDF.

BLM, 2010a, *Crescent Dunes Solar Energy Project Record of Decision*, Dec. Available at http://www.blm.gov/pgdata/etc/medialib/blm/nv/field_offices/battle_mountain_field/blm_information/nepa/crescent_dunes_solar.Par.21510.File.dat/Crescent%20Dunes%20ROD.pdf. Accessed Jan. 22, 2012.

BLM, 2010b, *Round Mountain Expansion Project*, June. Available at http://www.blm.gov/pgdata/etc/medialib/blm/nv/field_offices/battle_mountain_field/blm_information/nepa/round_mountain_expansion0.Par.37232.File.dat/ROD%20complete.pdf. Accessed Jan. 22, 2012.

BLM, 2010c, *Montezuma and Paymaster Wild Horse and Burro Roundup*, Sept. Available at http://www.blm.gov/nv/st/en/fo/battle_mountain_field/blm_programs/wild_horse_and_burro/montezuma_paymaster/gather_daily_reports.html. Accessed Jan. 22, 2012.

BLM, 2011a, *Visual Resource Inventory*, prepared for U.S. Department of the Interior, Bureau of Land Management, Battle Mountain District Office, Battle Mountain, Nevada, Oct.

BLM, 2011b, *Resource Management Plan—Battle Mountain District Office.* Available at http://www.blm.gov/nv/st/en/fo/battle_mountain_field/blm_information/rmp.html. Accessed June 21, 2011.

BLM, 2011c, *Instruction Memorandum 2012-032, Native American Consultation and Section 106 Compliance for the Solar Energy Program Described in Solar Programmatic Environmental Impact Statement*, U.S. Department of the Interior, Washington, D.C., Dec. 1.

BLM, 2011d, *Amendment to the Mineral Ridge Mine Plan of Operations Environmental Assessment,* Aug. Available at http://www.blm.gov/pgdata/etc/medialib/blm/nv/field_offices/battle_mountain_field/blm_information/nepa/amendment_to_the_minerals.Par.45128.File.dat/Final_Mineral_Ridge_Exploration_EA_508_LK_8-29-11.pdf. Accessed Jan. 22, 2012.

BLM, 2012, *Assessment of the Mineral Potential of Public Lands Located within Proposed Solar Energy Zones in Nevada*, prepared by Argonne National Laboratory, Argonne, Ill., July. Available at http://solareis.anl.gov/documents/index.cfm.

BLM and DOE (BLM and U.S. Department of Energy), 2010, *Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States*, DES 10-59, DOE/EIS-0403, Dec.

BLM and DOE, 2011, *Supplement to the Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States*, DES 11-49, DOE/EIS-0403D-S, Oct.

CEQ (Council on Environmental Quality), 1997, *Environmental Justice: Guidance under the National Environmental Policy Act*, Executive Office of the President, Dec. Available at http://ceq.hss.doe.gov/nepa/regs/ej/justice.pdf.

Chemetall, 2010, *Expansion of Domestic Production of Lithium Carbonate and Lithium Hydroxide to Supply US Battery* Industry, June 11. Available at http://www1.eere.energy.gov/vehiclesandfuels/pdfs/merit_review_2010/electrochemical_storage/esarravt010_groves_2010_p.pdf. Accessed Jan. 21, 2012.

EPA (U.S. Environmental Protection Agency), 2011a, *2008 National Emissions Inventory Data,* May 24. Available at http://neibrowser.epa.gov/eis-public-web/home.html. Accessed Jan. 3, 2012.

EPA, 2011b, *National Ambient Air Quality Standards (NAAQS)*. Last updated Nov. 8, 2011. Available at http://www.epa.gov/air/criteria.html. Accessed Nov. 23, 2011.

Flint, A.L., et al., 2004, "Fundamental Concepts of Recharge in the Desert Southwest: A Regional Modeling Perspective," pp. 159–184 in *Groundwater Recharge in a Desert Environment: The Southwestern United States*, J.F. Hogan et al. (editors), Water Science and Applications Series, Vol. 9, American Geophysical Union, Washington, D.C.

Golden Phoenix Minerals, 2011, *Golden Phoenix Joint Venture Partner Scorpio Gold Makes First Shipment of Loaded Gold Carbon to Refinery from the Mineral Ridge Gold Deposit, Nevada,* April 26. Available at http://goldenphoenix.us/press-release/golden-phoenix-joint-venture-partner-scorpio-gold-makes-first-shipment-of-loaded-gold-carbon-to-refinery-from-the-mineral-ridge-gold-deposit-nevada. Accessed Jan. 22, 2012.

Hershler, R., 1994, "A Review of the North American Freshwater Snail Genus *Pyrgulopsis* (Hydrobiidae)," in *Smithsonian Contributions to Zoology*, No. 554, Smithsonian Institution Press, Washington, D.C.

NDWR (Nevada Division of Water Resources), 1983, *State Engineer's Order 827*, Oct. 24. Available at http://water.nv.gov/Orders&Rulings/Rulings/rulings_query.cfm.

NDWR, 2012, *Hydrographic Area Summary: 137A, Big Smoky-Tonopah Flat*. Available at http://water.nv.gov/data/underground. Accessed March 23 and April 13, 2012.

NOAA (National Oceanic and Atmospheric Administration), 2012, *National Climatic Data Center (NCDC)*. Available at http://www.ncdc.noaa.gov/oa/ncdc.html. Accessed Jan. 16, 2012.

NRCS (Natural Resources Conservation Service), 2010, *Custom Soil Resource Report for Esmeralda County (covering the proposed Millers SEZ), Nevada*, U.S. Department of Agriculture, Washington, D.C., Aug. 17.

Platts, 2011, POWERmap, Strategic Desktop Mapping System, The McGraw Hill Companies. Available at http://www.platts.com/Products/powermap.

Rush, F.E., and C.V., Schroer, 1971, *Water Resources of Big Smoky Valley, Lander, Nye, and Esmeralda Counties, Nevada*, Water Resources Bulletin No. 41, State of Nevada, Department of Conservation and Natural Resources, Division of Water Resources, and U. S. Geological Survey.

SWCA and University of Arizona (SWCA Environmental Consultants and Bureau of Applied Research in Anthropology), 2011, *Ethnographic and Class I Records Searches for Proposed Solar Energy Zones in California, Nevada, and Utah for the Bureau of Land Management's Solar Programmatic Environmental Impact Statement*, prepared by SWCA Environmental Consultants, Albuquerque, N.M., and Bureau of Applied Research in Anthropology, University of Arizona, Tucson, Ariz., Dec.

U.S. Bureau of the Census, 2010, *American FactFinder*. Available at http://factfinder2.census.gov. Accessed April 6, 2012.

USDA (U.S. Department of Agriculture), 2004, *Understanding Soil Risks and Hazards—Using Soil Survey to Identify Areas with Risks and Hazards to Human Life and Property*, G.B. Muckel (ed.).

USGS (U.S. Geological Survey), 2004, *National Gap Analysis Program, Provisional Digital Land Cover Map for the Southwestern United S*tates, Version 1.0, RS/GIS Laboratory, College of Natural Resources, Utah State University. Available at http://earth.gis.usu.edu/swgap/landcover.html. Accessed March 15, 2010.

USGS, 2007, *National Gap Analysis Program, Digital Animal Habitat Models for the Southwestern United States*, Version 1.0, Center for Spatial Ecology, New Mexico Cooperative Fish and Wildlife Research Unit, New Mexico State University. Available at http://fws-nmcfwru.nmsu.edu/swregap/HabitatModels/default.htm. Accessed March 15, 2010.

USGS, 2012a, *National Hydrography Dataset (NHD)*. Available at http://nhd.usgs.gov. Accessed Jan. 16, 2012.

USGS, 2012b, *National Water Information System (NWIS)*. Available at http://waterdata.usgs.gov/nwis. Accessed Jan. 16, 2012.

11.7.26 Errata for the Proposed Millers SEZ

This section presents corrections to material presented in the Draft Solar PEIS and the Supplement to the Draft. The need for these corrections was identified in several ways: through comments received on the Draft Solar PEIS and the Supplement to the Draft (and verified by the authors), through new information obtained by the authors subsequent to publication of the Draft Solar PEIS and the Supplement to the Draft, or through additional review of the original material by the authors. Table 11.7.26-1 presents corrections to the material presented in the Draft Solar PEIS and the Supplement to the Draft.

TABLE 11.7.26-1 Errata for the Proposed Millers SEZ (Section 11.7 of the Draft Solar PEIS and Section C.4.5 of the Supplement to the Draft Solar PEIS)

Section No.	Page No.	Line No.	Figure No.	Table No.	Correction
11.7.11.2					All uses of the term ''neotropical migrants'' in the text and tables of this section should be replaced with the term ''passerines.''
11.7.13.2.1	11.7-144	9			The sentence ''Uniformly distributed emissions of 3,000 acres (12.1 km^2) each and 6,000 acres (24.3 km^2) in total, in the southeastern portion of the SEZ, close to the nearest residences and the town of Tonopah,'' should read, ''Uniformly distributed emissions of 3,000 acres (12.1 km^2) each and 6,000 acres (24.3 km^2) in total, in the eastern portion of the SEZ, close to the nearest residences and the town of Tonopah.''

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