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.

11.4 DRY LAKE VALLEY NORTH

11.4.1 Background and Summary of Impacts

11.4.1.1 General Information

The proposed Dry Lake Valley North SEZ is located in Lincoln County in southeastern Nevada. The population centers closest to the SEZ are Pioche, located about 15 mi (24 km) to the east, and Caliente, located about 15 mi (24 km) to the southeast; both communities have populations of about 1,000. The smaller communities of Caselton and Prince are located about 13 mi (21 km) to the east of the SEZ. The major roads nearest to the Dry Lake Valley North SEZ are State Route 318, which is about 7 mi (11 km) to the west of the SEZ, and U.S. 93, about 8 mi (13 km) to the south. Access to the interior of the SEZ is by dirt roads. The nearest railroad access is approximately 25 mi (40 km) from the SEZ. As of October 28, 2011, there were no pending solar applications within or adjacent to the SEZ.

As published in the Draft Solar PEIS (BLM and DOE 2010), the proposed Dry Lake Valley North SEZ had a total area of 76,874 acres (311 km^2). In the Supplement to the Draft (BLM and DOE 2011), the size of the SEZ was reduced (see Figure 11.4.1.1-1), eliminating 48,148 acres (195 km^2), mainly the northern portion of the SEZ. Removing the northern portion of the SEZ will avoid or minimize some potential impacts from development in the SEZ, including impacts on sage-grouse and other wildlife, impacts on grazing, and impacts on military operations. In addition, about 3,657 acres (15 km^2) of wetland and dry lake within the remaining SEZ boundaries were identified as non-development areas (Figure 11.4.1.1-2). The remaining developable area within the SEZ is 25,069 acres (101.5 km^2).

The lands eliminated from the proposed Dry Lake Valley North SEZ will be retained as solar ROW variance areas, because the BLM expects that individual projects could be sited in these areas to avoid and/or minimize impacts. Any solar development within these areas in the future would require appropriate environmental analysis.

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 proposed Dry Lake Valley North SEZ as described in the Draft Solar PEIS.

11.4.1.2 Development Assumptions for the Impact Analysis

Maximum solar development of the proposed Dry Lake Valley North SEZ was assumed to be 80% of the developable SEZ area over a period of 20 years, a maximum of 20,055 acres (81 km^2). Full development of the Dry Lake Valley North SEZ would allow development of facilities with an estimated total of between 2,228 MW (power tower, dish engine, or PV technologies, 9 acres/MW [0.04 km^2/MW]) and 4,011 MW (solar trough technologies, 5 acres/MW [0.02 km^2/MW]) of electrical power capacity.

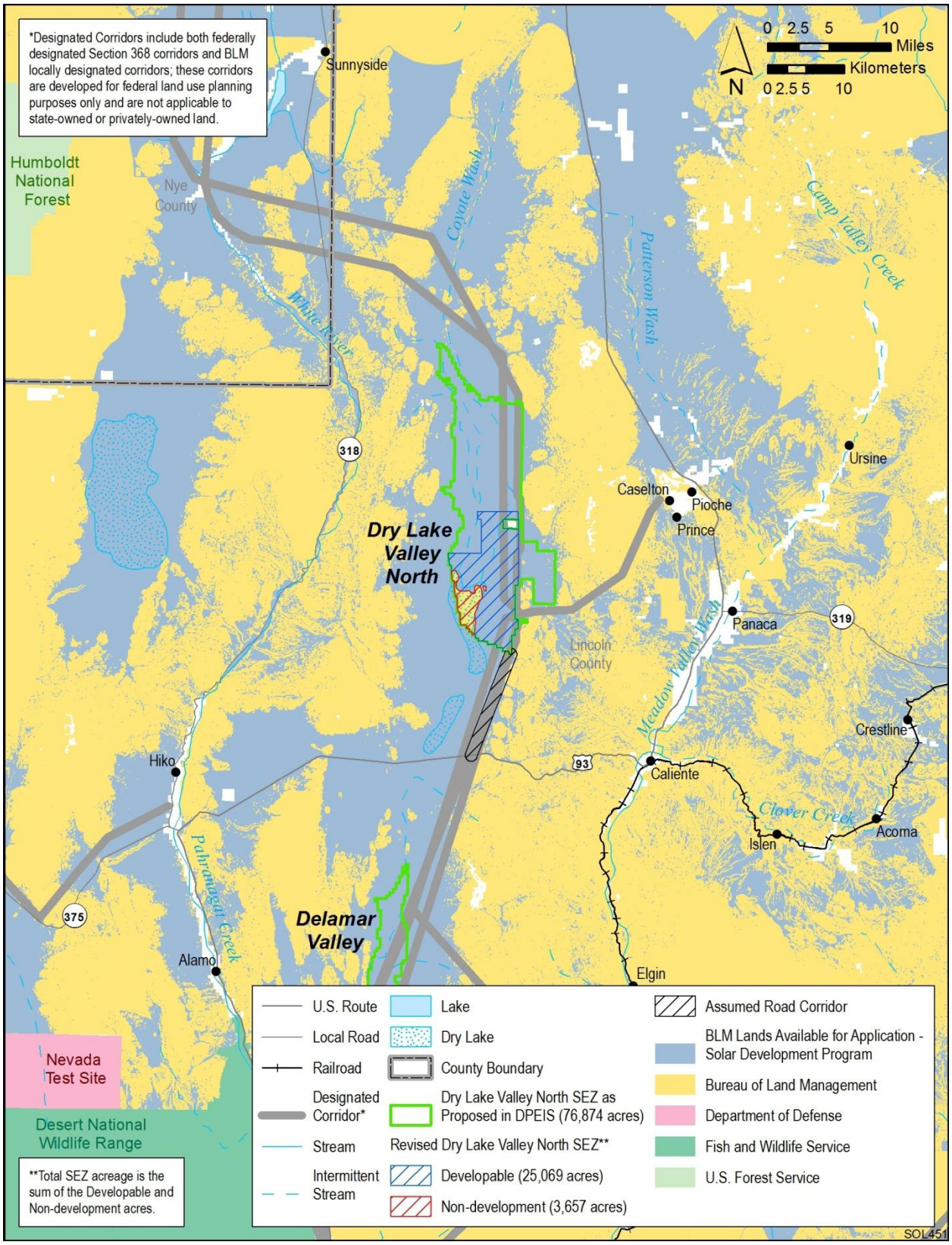

FIGURE 11.4.1.1-1 Proposed Dry Lake Valley North SEZ as Revised

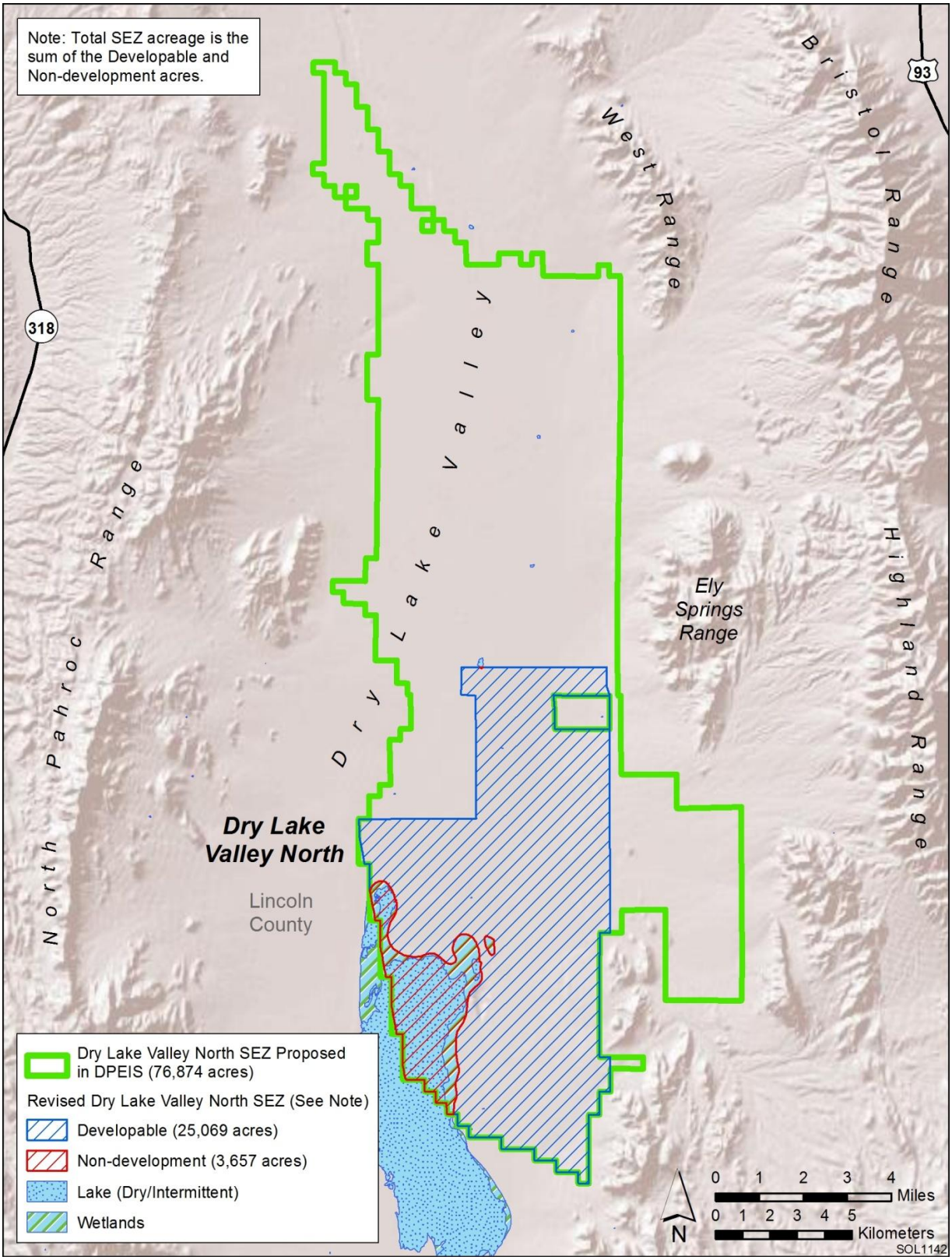

FIGURE 11.4.1.1-2 Developable and Non-development Areas for the Proposed Dry Lake Valley North SEZ as Revised

Availability of transmission from SEZs to load centers will be an important consideration for future development in SEZs. For the proposed Dry Lake Valley North SEZ, the nearest existing transmission line as identified in the Draft Solar PEIS is a 69-kV transmission 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 69-kV capacity of the existing line would not be adequate for 2,228 to 4,011 MW of new capacity. Therefore, at full build-out capacity, new transmission lines and possibly upgrades of existing transmission lines would be required to bring electricity from the proposed Dry Lake Valley North SEZ to load centers. An assessment of the most likely load center destinations for power generated at the Dry Lake Valley North SEZ and a general assessment of the impacts of constructing and operating new transmission facilities to those load centers are provided in Section 11.4.23. 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 also be required to identify the specific impacts of new transmission construction and line upgrades for any projects proposed within the SEZ.

The Dry Lake Valley North SEZ partially overlaps a Section 368 federally designated energy corridor. In addition, it overlaps a locally designated transmission corridor. For this impact assessment, it was assumed that up to 80% of the proposed SEZ could be developed. This assumption does not take into account the potential limitations to solar development that may result from siting constraints associated with these corridors. The development of solar facilities and existing corridors will be dealt with by the BLM on a case-by-case basis; see Section 11.4.2.2 on impacts on lands and realty for further discussion.

The Draft Solar PEIS had indicated that the nearest major access road was NV 318, located 7 mi (11 km) to the west of the SEZ, and that an access road to the SEZ would be built from NV 318. For this updated assessment, it was assumed that an access road would be built to U.S. 93, 8 mi (13 km) to the south of the SEZ, because the new access road to the south could utilize the corridor of an existing county road and would not pass over areas with steep terrain. It was assumed that construction of the access road would result in 58 acres (0.2 km^2) of land disturbance, as summarized in Table 11.4.1.2-1. While there are dirt/ranch roads within the SEZ, additional internal road construction would also likely be required to support solar facility construction.

11.4.1.3 Programmatic and SEZ-Specific Design Features

The proposed programmatic design features for each resource area to be required under BLM's 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 of 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 11.4.2 through 11.4.22) also provide an assessment of the effectiveness of the programmatic design features in mitigating adverse impacts from solar

TABLE 11.4.1.2-1 Assumed Development Acreages, Solar MW Output, and Nearest Major Access Road and Transmission Line for the Proposed Dry Lake Valley North 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 Transmission Corridor[e]
25,069 acres and 20,055 acres[a]	2,228 MW[b] and 4,011 MW[c]	U.S. 93 8 mi[d]	0 mi and 69 kV	58 acres	0 mi

[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] This access road ROW has been changed from that presented in the Draft Solar PEIS to assume tie in via an existing, non-mountainous route. To convert mi to km, multiply by 1.609.

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

development within the SEZ. SEZ-specific design features to address impacts specific to the proposed Dry Lake Valley North SEZ may be required in addition to the programmatic design features. The proposed SEZ-specific design features for the Dry Lake Valley North SEZ have been updated on the basis of revisions to the SEZ since the Draft Solar PEIS (such as boundary changes and the identification of non-development areas) and on the basis of comments received on the Draft and Supplement. All applicable SEZ-specific design features identified to date (including those from the Draft Solar PEIS that are still applicable) are presented in Sections 11.4.2 through 11.4.22.

11.4.2 Lands and Realty

11.4.2.1 Affected Environment

The boundary revision of the proposed SEZ has reduced the total area of the proposed SEZ by 48,148 acres (195 km^2) to 28,726 acres (116 km^2). This revised area is the southern portion of the original SEZ. Although the area is reduced in size, the general description of the southern portion of the area presented in the Draft Solar PEIS is still accurate; the playa lake has now been identified as a non-development area. The parcel of private land mentioned in the

Draft Solar PEIS is surrounded on three sides by the SEZ. Numerous roads and trails enter and/or cross through the proposed SEZ.

The proposed Dry Lake Valley North SEZ partially overlaps one Section 368 federally designated energy corridor and one locally designated transmission corridor. Both of these corridors were designated in the Ely Resource Management Plan (RMP) in 2008 (BLM 2008). The western locally designated corridor is 2,640 ft (804 m) wide and was designated at the direction of Congress in the Lincoln County Conservation, Recreation, and Development Act (LCCRDA) of 2004 to accommodate a water pipeline, transmission line, and related facilities proposed by the SNWA. The eastern corridor is part of the Southwest Intertie Project and was designated as a Section 368 Corridor in 2009.[1] These existing corridors will be used primarily for the siting of transmission lines and other infrastructure such as pipelines. These existing corridors will be the preferred locations for any transmission development that is required to support solar development and future transmission grid improvements related to the build-out of the Dry Lake Valley North SEZ. Any use of the corridor lands within the Dry Lake Valley North SEZ for solar energy facilities, such as solar panels or heliostats, must be compatible with the future use of the existing corridors. The BLM will assess solar projects in the vicinity of existing corridors 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.

11.4.2.2 Impacts

There is a large change in the potential land use impacts as a result of the reduction in the amount of area that might be occupied by solar facilities. The maximum developable area for solar development within the originally proposed SEZ was 61,499 acres (102 km^2); for the revised SEZ the maximum developable area is 20,055 acres (81 km^2). This change results in a smaller area of intense industrial type development, but the solar development would still introduce a new and discordant land use into this isolated and undeveloped area.

Solar facilities cannot be constructed within the ROWs of existing transmission lines or pipelines because of incompatibility issues such as construction and operational safety, conductor to ground clearances, and the need to maintain access for construction and maintenance of transmission line or pipeline structures. Utility corridors and the Section 368 corridors are much wider than the typical transmission line ROWs (e.g., 200 ft [61 m] for a 500-kV line); thus some use of the corridors for solar facilities might be possible as long as the actual ROW of transmission lines or pipelines was not used. However, such use of the corridors would limit their use for additional transmission in the future. The LCCRDA is congressionally authorized, and because of this, the area of the SEZ within the western ROW corridor (approximately 3,600 acres [14.5 km^2]) would likely not be available for solar development. It is also not considered likely that this corridor could be moved

[1] Section 368 of the Energy Policy Act of 2005 (P.L. 109-58) required federal agencies to engage in transmission corridor planning (see Section 1.6.2.1 of the Draft Solar PEIS). As a result of this mandate, the BLM, DOE, USFS, and DoD prepared a PEIS to evaluate the designation of energy corridors on federal lands in 11 western states, including the 6 states evaluated in this study (DOE and DOI 2008). The BLM and USFS issued RODs to amend their respective land use plans to designate numerous corridors, often referred to as Section 368 corridors.

outside of the SEZ in order to eliminate or minimize the impact on future solar development. Conversely, the capacity for future electrical transmission lines or pipelines within the eastern ROW corridor would be restricted by solar energy development within that corridor. The situation with the eastern corridor is an administrative conflict that can be addressed by the BLM through its planning process, but there would be implications either for the amount of potential solar energy development that could be accommodated within the SEZ or for the amount of additional corridor capacity available for future development. These issues would be addressed at the project-specific level and could result in the need for amendment of the BLM's land use plan for the area.

It is now assumed that road access to the SEZ would be to U.S. 93. Although an additional 58 acres (0.2 km^2) of land disturbance was assumed for construction of the access road, it is likely that part of the road would follow the route of an existing county road, thereby minimizing land disturbance.

The existing roads that cross or enter the proposed revised SEZ could be closed or relocated if solar development occurs. If any of these roads are County roads, the County would need to be consulted and would have to agree on their disposition. The County would also have to be consulted on any improvement in the access road from U.S. 93 and on future maintenance requirements.

11.4.2.3 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.

On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those analyses due to changes to the SEZ boundaries, and consideration of comments received as applicable, the following SEZ-specific design feature for near the revised Dry Lake Valley North SEZ has been identified:

- Priority consideration should be given to utilizing existing County roads to provide construction and operations access to the SEZ. Any potential impacts on existing County roads would be discussed with the County.

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.

11.4.3 Specially Designated Areas and Lands with Wilderness Characteristics

11.4.3.1 Affected Environment

The discussion of specially designated areas in the Draft Solar PEIS remains valid with the exception that after the revision of the proposed boundaries of the SEZ, the closest that any portion of the Silver State OHV Trail is to the SEZ is about 3 mi (5 km), and most of the boundary of the SEZ is now greater than 5 mi (8 km) from the trail.

11.4.3.2 Impacts

A small adverse impact on wilderness characteristics in the Weepah Spring and Big Rocks WAs is still anticipated. The Silver State OHV Trail is located on the east, south, and west sides of the SEZ, but with the change in SEZ boundaries, it is now anticipated that there would be no impact on trail users.

Other impacts on specially designated areas described in the Draft Solar PEIS remain accurate.

Improvement of 8 mi (13 km) of the current access road to the proposed SEZ from U.S. 93 would not likely result in additional adverse impacts on surrounding specially designated areas.

11.4.3.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on specially designated areas are described in Section A.2.2 of Appendix A of this Final Solar PEIS (design features for both specially designated areas and visual resources would address impacts). Implementing the programmatic design features will provide some mitigation for the identified impacts but would not mitigate all adverse impacts.

On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those analyses due to changes to the SEZ boundaries, and consideration of comments received as applicable, no SEZ-specific design features for specially designated areas and lands with wilderness characteristics 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.

11.4.4 Rangeland Resources

11.4.4.1 Livestock Grazing

11.4.4.1.1 Affected Environment

The revision to the boundary of the proposed SEZ removes the Wilson Creek and Simpson grazing allotments from the SEZ. The only allotment still within the proposed SEZ boundary is the Ely Springs Cattle allotment. The grazing permittee has indicated interest in solar development on his private land located near the northeastern corner of the SEZ, and that he would support development in the allotment.

11.4.4.1.2 Impacts

The anticipated impacts on the Ely Springs Cattle allotment of a potential loss of 2,761 AUMs (65%) from that allotment remain the same as identified in the Draft Solar PEIS. The Wilson Creek and Simpson allotments would no longer be directly affected.

Economic impacts of the loss of grazing capacity must be determined at the allotment-specific level. For most public land grazing operations, any loss of grazing capacity is an economic concern, but it is not possible to assess the extent of that specific impact at this programmatic level. For that reason, only a general assessment is made based on the projected loss of livestock AUMs. This assessment does not consider potential impacts on management costs, the impacts of reducing the scale of an operation, or the impact on the grazing value of the ranch, including the value related to the private land or other associated assets. Based on law and regulation, this loss of value for permittees would not be mitigated directly by the BLM; rather, developers of solar projects within the SEZ would be encouraged to mitigate such losses.

11.4.4.1.3 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 identified impacts but will not mitigate a complete loss of the grazing permit, the loss of livestock AUMs, or the loss of value in ranching operations, including private land values.

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

- Within the Ely Springs cattle allotment, solar development should be sited to minimize the number of pastures affected, and existing range improvements should be relocated in coordination with the grazing permittee.

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.

11.4.4.2 Wild Horses and Burros

11.4.4.2.1 Affected Environment

As presented in the Draft Solar PEIS, 5.4% of the Silver King HMA occurred within the original boundaries of the Dry Lake Valley North SEZ (Figure 11.4.4.2-1 of the Draft Solar PEIS). However, the revised area of the SEZ now avoids all but 0.02% of the Silver King HMA (Figure 11.4.4.2-1).

11.4.4.2.2 Impacts

As presented in the Draft Solar PEIS, solar energy development within the proposed Dry Lake Valley North SEZ could have directly affected about 32,440 acres (131.3 km^2), more than 5% of the Silver King HMA (BLM 2010a). This was considered a moderate impact on the wild horse population within the HMA. Solar energy development within the revised area of the Dry Lake Valley North SEZ would directly affect only 140 acres (0.6 $km^{2)}$ of this HMA, which is considered a small potential impact. Also, the change in assumed access road assumption (to connect to U.S. 93) means that the access road would not cross through the Silver King HMA.

11.4.4.2.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on wild horses and burros 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.

On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those analyses due to changes to the SEZ boundaries, and consideration of comments received as applicable, the following SEZ-specific design feature to address impacts on wild horses and burros has been identified:

- Installation of fencing and access control, provision for movement corridors, delineation of open range, traffic management (e.g., vehicle speeds), compensatory habitat restoration, and access to or development of water sources should be coordinated with the BLM.

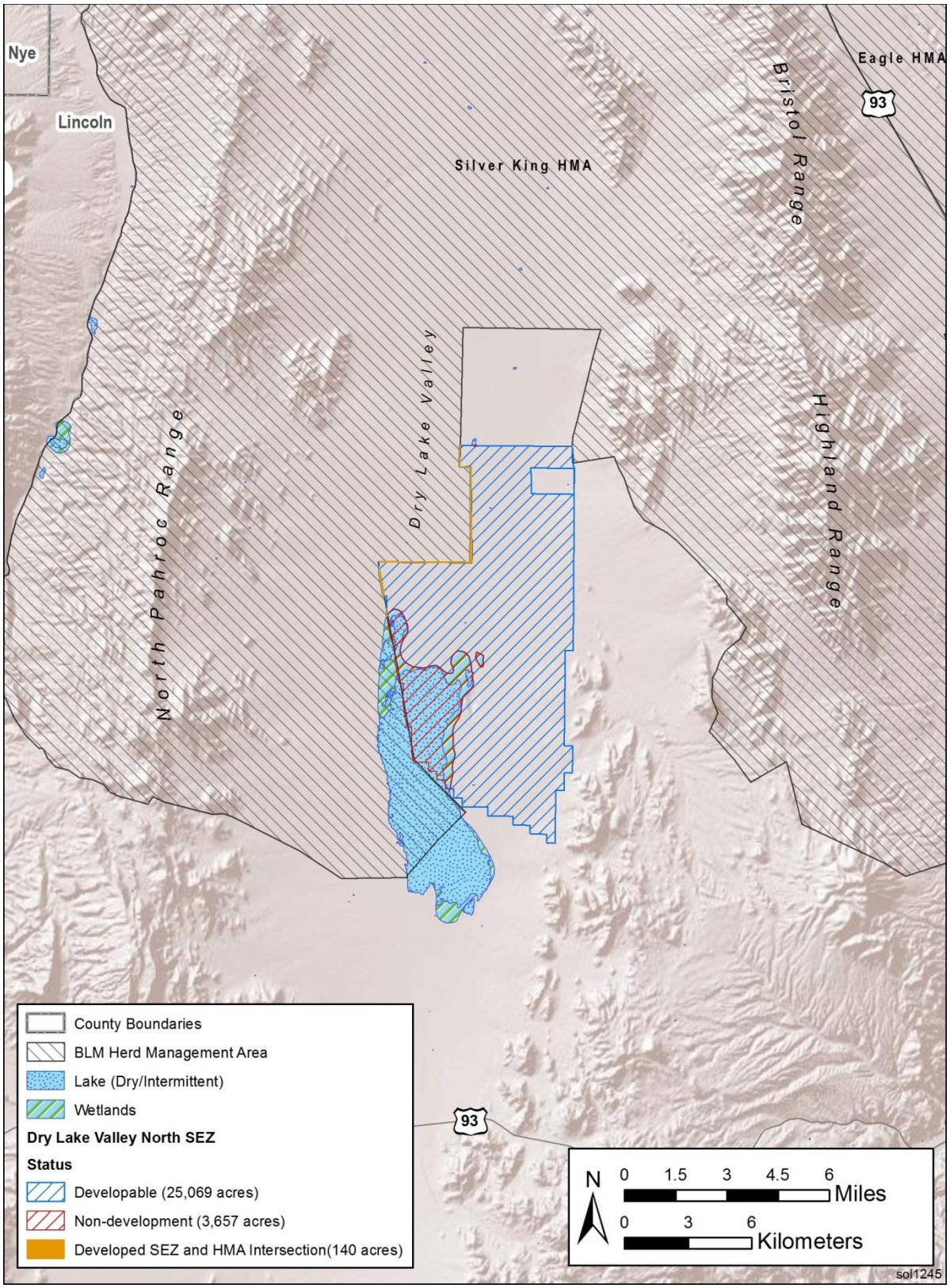

FIGURE 11.4.4.2-1 Silver King Wild Horse and Burro Herd Management Area near the Proposed Dry Lake Valley North SEZ as Revised (Source: BLM 2010a)

With the implementation of required programmatic and SEZ-specific design features, impacts on wild horses 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.

11.4.5 Recreation

11.4.5.1 Affected Environment

The boundary of the proposed SEZ has been reduced by 48,148 acres (195 km^2), and the SEZ has been reduced in length from about 25 mi (40 km) to about 11 mi (17.7 km).

11.4.5.2 Impacts

Recreational use of lands developed for solar energy production, including OHV use of designated roads and trails, would be precluded. The types of impacts described in the Draft Solar PEIS are still accurate but would take place on substantially fewer acres, leading to a reduction in the potential level of impact on recreational users.

In addition, lands that are outside 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.

Improvement of 8 mi (13 km) of the existing access road to the proposed SEZ from U.S. 93 would benefit recreational users of the area.

11.4.5.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on recreation 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

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

- Because of the 11 mi (18 km) length of the SEZ and the potential for solar development to sever current east–west travel routes, legal vehicular access through the area should be maintained.

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.

11.4.6 Military and Civilian Aviation

11.4.6.1 Affected Environment

Although the size of the proposed Dry Lake Valley North SEZ has been substantially reduced, the discussion of military uses of the SEZ in the Draft Solar PEIS remains valid. Portions of the proposed Dry Valley Lake North SEZ are covered by two MTRs with 200-ft (61-m) AGL operating limits and a major special use airspace (SUA). The area is completely included within the airspace use boundary of the NTTR. Supersonic speeds are authorized at and above 5,000 AGL (1,524 m) in the NTTR in this area.

11.4.6.2 Impacts

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

- Light from solar energy 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 proposed Dry Lake Valley North area be removed from consideration as an SEZ and that the entire area (original and remaining SEZ) be identified as an exclusion area. If the area is not eliminated from consideration, the DoD requests that the technology at the site be restricted to low-profile, low-glare PV technologies under 50 ft AGL (15 m), similar to the PV I array at Nellis Air Force Base.

11.4.6.3 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 and military testing activities.

No SEZ-specific design features to protect either military airspace or civilian aviation operations 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.

11.4.7 Geologic Setting and Soil Resources

11.4.7.1 Affected Environment

11.4.7.1.1 Geologic Setting

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

- The terrain of the proposed Dry Lake Valley North SEZ slopes gently to the west and southwest (Figure 11.4.7.1-1). The boundaries of the proposed SEZ have been changed to exclude mainly the northern portion of the SEZ. Within this revised area, about 3,657 acres (15 km^2) of wetland and dry lake have been identified as non-development areas. On the basis of these changes, the elevations range from about 4,800 ft (1,463 m) at its northeast corner to about 4,498 ft (1,370 m) near the SEZ's southwest corner at Dry Lake.

11.4.7.1.2 Soil Resources

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

- Soils within the proposed Dry Lake Valley North SEZ as revised are predominantly a mix of sandy loams, silt loams, loamy sands, and loams; the Saltydog–Ambush–Panacker and Koyen–Geer associations now make up about 46% of the soil coverage at the site (Table 11.4.7.1-1).

- Soil unit coverage at the proposed Dry Lake Valley North SEZ as revised is shown in Figure 11.4.7.1-2. Taken together, the new SEZ boundaries and non-development areas eliminate 2,415 acres (9.8 km2) of the Saltydog–Ambush–Panacker association, 4,339 acres (18 km^2) of the Koyen–Geer association, 908 acres (3.7 km^2) of the Tybo–Leo association, 2,755 acres (11 km^2) of the Ewelac–Playas association, 1,210 acres (4.9 km^2) of the Cliffdown–Geer association, 3,640 acres (14.7 km^2) of the Ambush–Penoyer association, 856 acres (3.5 km^2) of the Geer–Penoyer association, 2,488 acres (10 km^2) of the Saltydog–Geer association, 1,599 acres (6.5 km^2) of the Ambush–Panacker–Playas association, 1,075 acres (4.4 km^2) of the Ursine association, 6,999 acres (28 km^2) of the Koyen–Slaw–Penoyer association, 6,366 acres (26 km^2) of the Koyen–Slaw–Penoyer association, 8,793 acres (36 km^2) (all) of the Koyen–Penoyer association, 4,634 acres (19 km^2) (all) of the Watoopah gravelly loamy sand, 2,267 acres (9.2 km^2) (all) of the Penoyer–Geer association, 797 acres (3.2 km^2) (all) of the Ursine-moderately sloping-Mezzer-Ursine association, and 327 acres (1.3 km^2) (all) of the Leo-Delamar association.

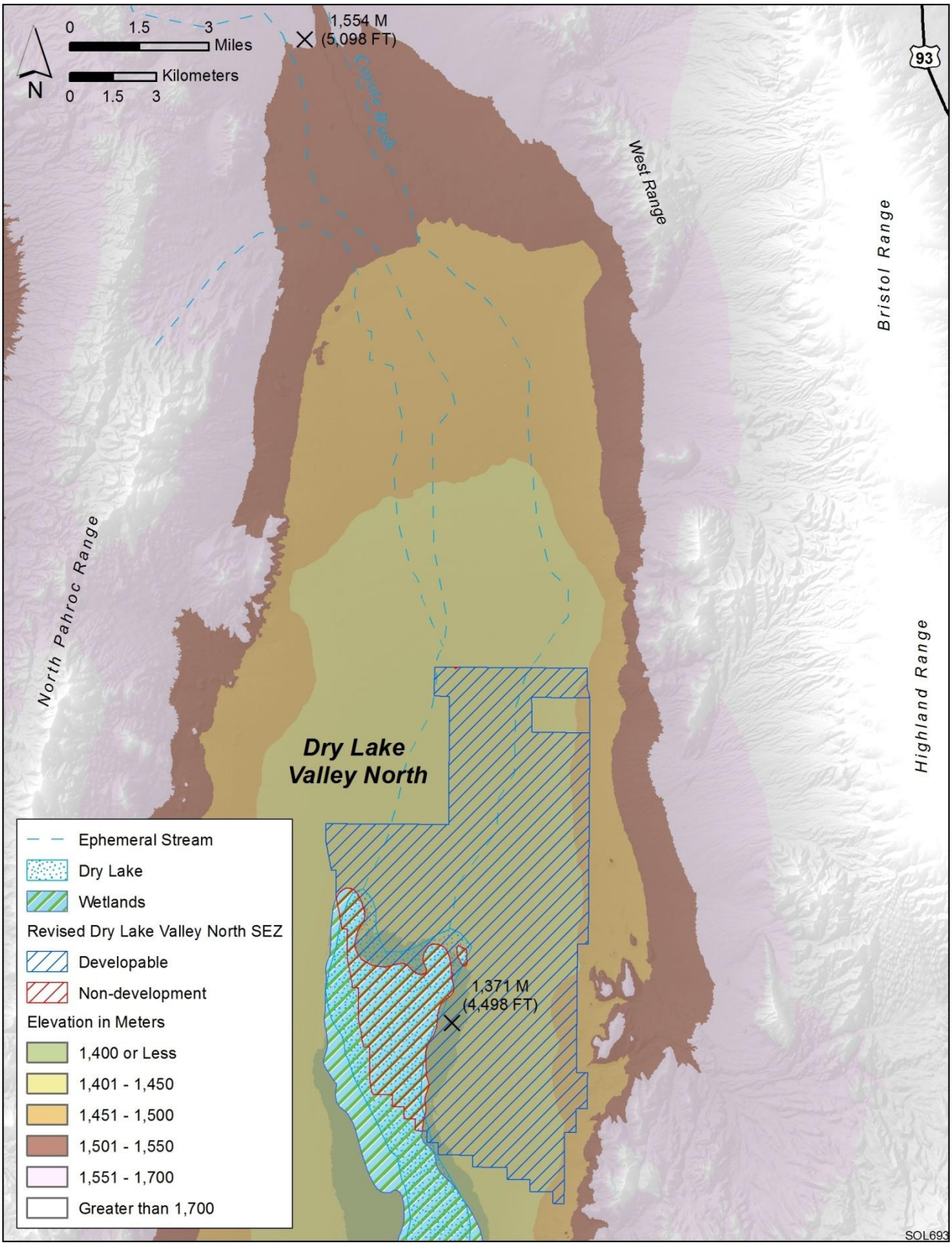

FIGURE 11.4.7.1-1 General Terrain of the Proposed Dry Lake Valley North SEZ as Revised

TABLE 11.4.7.1-1 Summary of Soil Map Units within the Proposed Dry Lake Valley North SEZ as Revised

Map Unit Symbol	Map Unit Name	Erosion Potential		Description	Area in Acres[c] (Percentage of SEZ)
		Water[a]	Wind[b]		
3192	Saltydog–Ambush–Panacker association	Moderate	Moderate (WEG 3)[d]	Consists of 40% Saltydog loam, 30% Ambush fine sandy loam, and 20% Panacker fine sandy loam. Level to nearly level soils on alluvial flats. Parent material is alluvium and lacustrine deposits from limestone and welded tuff (Saltydog) and eolian deposits over lacustrine deposits. Very deep and well drained, with moderate surface runoff potential and moderate to moderately rapid permeability. Available water capacity is moderate to high. Moderate rutting hazard. Used mainly for livestock grazing and wildlife habitat. Prime farmland[e] if irrigated and reclaimed of excess salts and sodium.	7,212 (27.3)[f]
1076	Koyen–Geer association	Slight	Moderate (WEG 4)	Consists of about 60% Koyen loamy sand and 30% Geer sandy loam. Level to nearly level soils on alluvial fan skirts, alluvial flats, and drainageways. Parent material is alluvium from volcanic rocks with a high component of loess (Koyen) and welded tuff and limestone with a minor component of volcanic ash (Geer). Very deep and well drained, with moderate surface runoff potential and moderate to moderately rapid permeability. Available water capacity is moderate. Moderate rutting hazard. Used mainly for livestock grazing, wildlife habitat, and cultivated crops of alfalfa and small grains (Geer). Prime farmland if irrigated and reclaimed of excess salts and sodium.	6,057 (21.1)[g]
1473	Tybo–Leo association	Moderate	Moderate (WEG 4)	Consists of 60% Tybo gravelly coarse sandy loam and 25% Leo very gravelly sandy loam. Nearly level soils on inset fans and fan remnants. Parent material is alluvium from mixed sources, including volcanic rocks. Shallow to a duripan (Tybo) to very deep and well to excessively drained, with high surface runoff potential (very slow infiltration rate) and moderately rapid to rapid permeability. Available water capacity is very low to low. Moderate rutting hazard. Used mainly for livestock grazing, wildlife habitat, and irrigated cropland.	3,107 (10.8)

TABLE 11.4.7.1-1 (Cont.)

Map Unit Symbol	Map Unit Name	Erosion Potential		Description	Area in Acres[c] (Percentage of SEZ)
		Water[a]	Wind[b]		
3193	Ewelac–Playas association	Moderate	Moderate (WEG 4)	Consists of 50% Ewelac silt loam and 40% Playas (silty clay loam). Level to nearly level soils on basin floors and alluvial flats. Parent material is lacustrine deposits from mixed sources. Very deep and somewhat poorly (playas) to moderately well drained, with high surface runoff potential (very slow infiltration) and moderately rapid permeability. Available water capacity is very low (playas) to high. Severe rutting hazard. Used mainly for livestock grazing and wildlife habitat.	2,766 (9.6)[h]
1022	Cliffdown–Geer association	Slight	Moderate (WEG 5)	Consists of about 60% Cliffdown very gravelly sandy loam and 30% Geer fine sandy loam. Nearly level to gently sloping soils on fan remnants and fan skirts. Parent material is alluvium from welded tuff and limestone with a minor component of volcanic ash. Very deep and well to somewhat excessively drained, with moderate surface runoff potential and moderately rapid permeability. Available water capacity is low to moderate. Slight rutting hazard. Used mainly for grazing and wildlife habitat.	2,545 (8.9)
3198	Ambush–Penoyer association	Moderate	Moderate (WEG 3)	Consists of 50% Ambush fine sandy loam and 40% Penoyer very fine sandy loam. Level to nearly level soils on alluvial flats. Parent material is eolian deposits over lacustrine deposits. Very deep and well drained, with moderate surface runoff potential and moderate to moderately rapid permeability. Available water capacity is moderate to high. Moderate rutting hazard. Used mainly for livestock grazing and wildlife habitat.	1,841 (6.4)[i]
1021	Geer–Penoyer association	Moderate	Moderate (WEG 3)	Consists of about 65% Geer fine sandy loam and 30% Penoyer silt loam. Level to nearly level soils on alluvial fan skirts and alluvial flats. Parent material is alluvium from welded tuff and limestone with a minor component of volcanic ash. Very deep and well drained, with moderate surface runoff potential and moderate permeability. Available water capacity is high. Severe rutting hazard. Used mainly for livestock grazing and wildlife habitat.	1,827 (6.4)[j]

TABLE 11.4.7.1-1 (Cont.)

Map Unit Symbol	Map Unit Name	Erosion Potential		Description	Area in Acres[c] (Percentage of SEZ)
		Water[a]	Wind[b]		
3196	Saltydog–Geer association	Moderate	Moderate (WEG 4L)	Consists of about 60% Saltydog loam and 30% Geer fine sandy loam. Level to nearly level soils on alluvial flats. Parent material is alluvium from welded tuff and limestone with a minor component of volcanic ash. Very deep and well drained, with moderate surface runoff potential and moderate to moderately rapid permeability. Available water capacity is moderate to high. Severe rutting hazard. Used mainly for livestock grazing and wildlife habitat. Prime farmland if irrigated and reclaimed of excess salts and sodium.	1,503 (5.2)[k]
3194	Ambush–Panacker–Playas association	Moderate	Moderate (WEG 3)	Consists of about 45% Ambush fine sandy loam, 30% Panacker fine sandy loam, and 15% Playas (silty clay loam). Level to nearly level soils on alluvial flats and basin floors. Parent material is eolian deposits and alluvium from mixed sources over lacustrine deposits. Very deep and somewhat poorly (playas) to well drained, with moderate surface runoff potential and moderate to moderately rapid permeability. Available water capacity is very low (playas) to high. Moderate rutting hazard. Used mainly for livestock grazing and wildlife habitat. Prime farmland if irrigated and reclaimed of excess salts and sodium.	974 (3.4)[l]
1034	Ursine association	Moderate	Moderate (WEG 6)	Moderately sloping, very gravelly loam on fan remnants. Parent material is alluvium from mixed sources. Shallow to a duripan and well drained, with high surface runoff potential (very slow infiltration rate) and moderately rapid permeability. Available water capacity is very low. Moderate rutting hazard. Used mainly for livestock grazing and wildlife habitat.	196 (<1)

TABLE 11.4.7.1-1 (Cont.)

Map Unit Symbol	Map Unit Name	Erosion Potential		Description	Area in Acres[c] (Percentage of SEZ)
		Water[a]	Wind[b]		
1074	Koyan–Slaw–Penoyer association	Low	High (WEG 1)	Consists of 55% Kenoyan loamy fine sand, 20% Slaw silt loam, and 15% Penoyer very fine sandy loam. Level to nearly level soils on basin floors, basin floor remnants, and fan skirts. Parent material is alluvium from volcanic rocks with a high loess component. Very deep and well drained, with moderate surface runoff potential and slow (Slaw) to moderately rapid permeability. Available water capacity is moderate to high. Moderate rutting hazard. Used mainly for livestock grazing, wildlife habitat, and limited irrigated cropland.	17 (<1)
1030	Ursine–Escalante association	Moderate	Moderate (WEG 5)	Consists of 55% Ursine gravelly loam and 30% Escalante fine sandy loam. Nearly level to gently sloping soils formed on inset fans, fan remnants, and drainageways. Parent material is alluvium from rhyolite and some limestone. Shallow to a duripan (Ursine) to very deep and well drained, with high surface runoff potential (very slow infiltration rate) and moderate to moderately rapid permeability. Moderately to strongly saline. Available water capacity is very low to low. Moderate rutting hazard. Used mainly for livestock grazing, wildlife habitat, and limited irrigated cropland.	4 (<1)

[a] 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 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.

[b] 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).

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

Footnotes continued on next page.

TABLE 11.4.7.1-1 (Cont.)

[d] 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.

[e] Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and that is available for these uses.

[f] A total of 617 acres (2.5 km^2) within the Saltydog–Ambush–Panacker association is currently categorized as a non-development area (denoted by red areas in Figure 11.4.7.1-2).

[g] A total of 3 acres (0.012 km^2) within the Koyen–Geer association is currently categorized as a non-development area (denoted by red areas in Figure 11.4.7.1-2).

[h] A total of 2,700 acres (10.9 km^2) within the Ewelac–Playas association is currently categorized as a non-development area (denoted by red areas in Figure 11.4.7.1-2).

[i] A total of 6 acres (0.024 km^2) within the Ambush–Penoyer association is currently categorized as a non-development area (denoted by red areas in Figure 11.4.7.1-2).

[j] A total of 4 acres (0.016 km^2) within the Geer–Penoyer association is currently categorized as a non-development area (denoted by red areas in Figure 11.4.7.1-2).

[k] A total of 1 acre (0.004 km^2) within the Saltydog–Geer association is currently categorized as a non-development area (denoted by red areas in Figure 11.4.7.1-2).

[l] A total of 285 acres (0.040 km^2) within the Ambush–Panacker–Playas association is currently categorized as a non-development area (denoted by red areas in Figure 11.4.7.1-2).

Source: NRCS (2010).

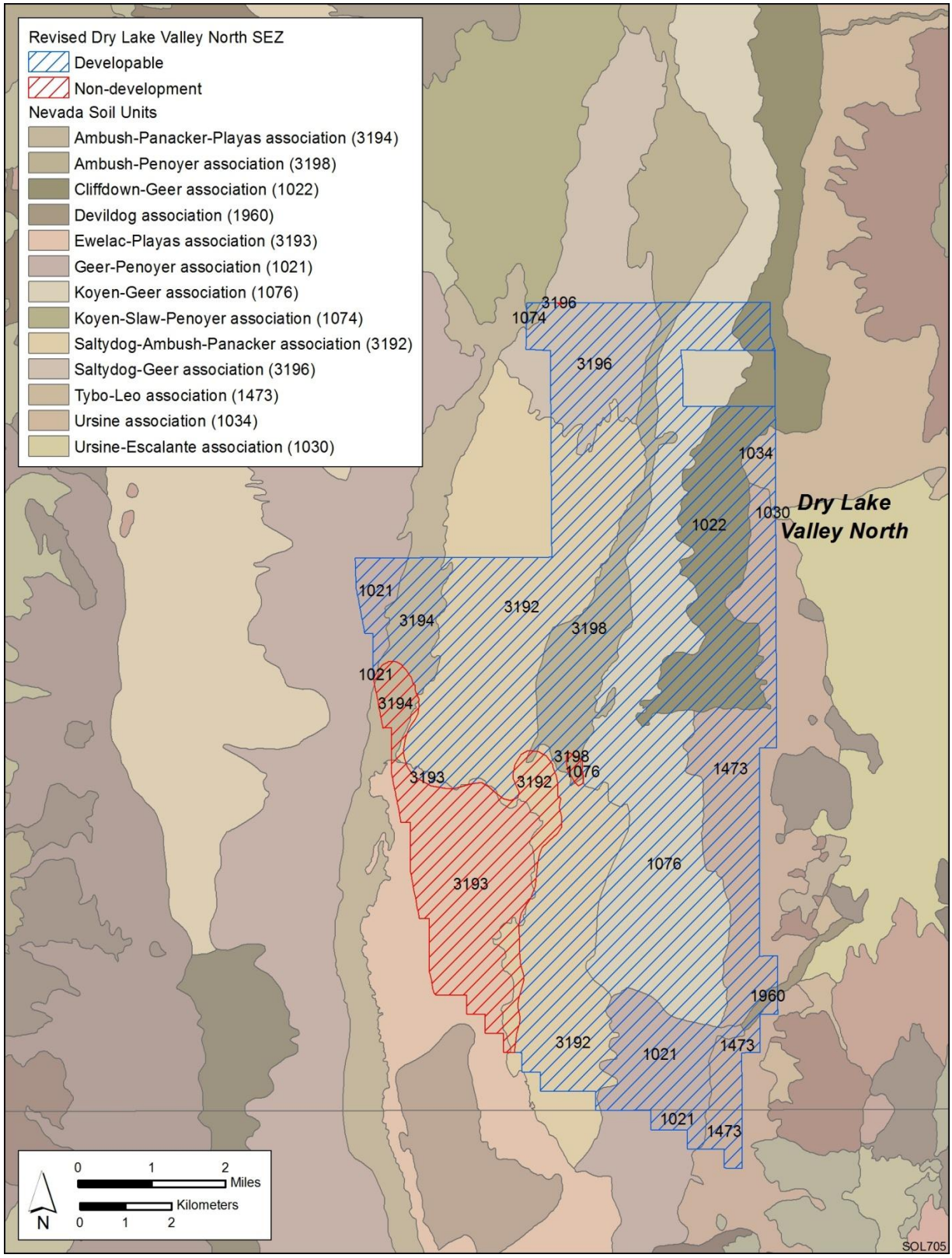

FIGURE 11.4.7.1-2 Soil Map for the Proposed Dry Lake Valley North SEZ as Revised (Source: NRCS 2008)

11.4.7.2 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 impacts on soil resources result from ground-disturbing activities in the project area, soil impacts would be roughly proportional to the size of a given solar facility, with larger areas of disturbed soil having a greater potential for impacts than smaller areas (Section 5.7.2). The assessment provided in the Draft Solar PEIS remains valid, with the following updates:

- Impacts related to wind erodibility are reduced because the identification of new SEZ boundaries and non-development areas eliminates 40,813 acres (165 km^2) of moderately erodible soils and 6,999 acres (28 m^2) of highly erodible soils (Koyen–Slaw–Penoyer association) from development.

- Impacts related to water erodibility are reduced because the identification of new SEZ boundaries and non-development areas eliminates 33,571 acres (136 km^2) of moderately erodible soils and 2,267 acres (9.2 km^2) of highly erodible soils (Penoyer–Geer association) from development.

11.4.7.3 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, updates to those analyses due to changes to the SEZ boundaries, and consideration of comments received as applicable, no SEZ-specific design features for soil resources were identified. Some SEZ-specific design features may be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

11.4.8 Minerals (Fluids, Solids, and Geothermal Resources)

A mineral potential assessment for the proposed Dry Lake Valley North SEZ has been prepared and reviewed by BLM mineral specialists knowledgeable about the region where the SEZ is located (BLM 2012a). 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 this Final Solar PEIS). The potential impacts of this withdrawal are discussed in Section 11.4.24.

11.4.8.1 Affected Environment

The revised proposed SEZ contains two existing oil and gas leases that are classified as nonproducing. This is a revision of the estimate of six existing leases in the Draft Solar PEIS.

There are no existing mining claims or geothermal leases within the revised SEZ. The rest of the description of the SEZ in the Draft Solar PEIS remains valid.

11.4.8.2 Impacts

The two existing oil and gas leases are prior existing rights that would be protected as required under current regulations. For the purpose of this analysis, it was assumed that future development of oil and gas resources would continue to be possible, since such development could occur under the existing leases or from directional drilling from new leases. Since the SEZ does not contain existing mining claims, it was also assumed that there would be no future loss of locatable mineral production. The production of common minerals might take place in the SEZ in areas not directly developed for solar energy production. Since the SEZ has had no history of development of geothermal resources or of leasing interest, it is not anticipated that solar development would adversely affect the development of geothermal resources.

11.4.8.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on mineral extraction 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, updates to those analyses due to changes to the SEZ boundaries, and consideration of comments received as applicable, no SEZ-specific design features to address impacts on minerals 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.

11.4.9 Water Resources

11.4.9.1 Affected Environment

The overall size of the proposed Dry Lake Valley North SEZ has been reduced by 63% from the area described in the Draft Solar PEIS, resulting in a total area of 28,726 acres (116 km^2). The description of the affected environment given in the Draft Solar PEIS relevant to water resources at the proposed Dry Lake Valley North SEZ remains valid and is summarized in the following paragraphs.

The Dry Lake Valley North SEZ is within the Central Nevada Desert subbasin of the Great Basin hydrologic region. The SEZ is located in the Dry Lake Valley and is surrounded by uplifted volcanic and carbonate rock mountain ranges. The average precipitation ranges from 7 to 16 in./yr (18 to 41 cm/yr), and the estimated pan evaporation rate is about 80 in./yr (203 cm/yr). No perennial surface water features are present in the SEZ. There is a dry lake that

covers an area of approximately 8,064 acres mi^2 (33 km^2) in the southern portion of the valley. Coyote Wash and Cherry Creek flow from north to south through the SEZ, along with several other intermittent/ephemeral streams and braided channels of alluvial outwash plains in the region. Flood hazards have not been identified for the area surrounding the SEZ, but intermittent flooding may occur along the intermittent/ephemeral washes and within the dry lake area. The Dry Lake Valley groundwater basin consists of basin-fill deposits on the order of 3 mi (5 km) in thickness and is underlain by sequences of carbonate rock aquifers. The carbonate rock aquifers are a part of the White River Groundwater Flow System (a subunit of the Colorado River groundwater system), a regional-scale groundwater system that generally flows southward and terminates at Muddy River Springs, Rogers and Blue Point Springs, and the Virgin River. Estimates of groundwater recharge to the Dry Lake Valley range from 5,000 to 15,667 ac-ft/yr (6.2 to 19 million m^3/yr), with a depth to groundwater of more than 400 ft (122 m). The hydraulic gradient in the basin-fill aquifer was estimated to be 0.0025 in a southward direction. Groundwater quality varies in the Dry Lake Valley basin, but high concentrations (exceeding, or near to, the MCL) of arsenic, thallium, and iron have been found in water samples.

All waters in Nevada are public property, and the NDWR is the agency responsible for managing both surface and groundwater resources. The Dry Lake Valley groundwater basin is not a designated groundwater basin; thus there are no specific beneficial uses set by the NDWR. The NDWR sets the perennial yield for each groundwater basin, which is technically the amount of water available for water rights allocations. The Dry Lake Valley groundwater basin's perennial yield was set at 12,700 ac-ft/yr (15.7 million m^3/yr) according to State Engineer's Ruling 5875 (NDWR 2008), which also granted a 11,584 ac-ft/yr (14.3 million m^3/yr) water right to the SNWA. State Engineer's Ruling 5875 from 2008 and State Engineer's Ruling 5993 (NDWR 2009) from 2009 resulted in a full allocation of water rights in the Dry Lake Valley groundwater basin; however, in October 2009, the Seventh Judicial District Court of Nevada issued an order to vacate the State Engineer's Ruling. The SNWA appealed this decision to the Nevada Supreme Court in November 2009, which resulted in the lower court and the NDWR having to reconsider SNWA's original water rights application (Legislative Council Bureau 2010). The NDWR held a hearing on the water right application in the fall of 2011, and the NDWR issued a decision on March 22, 2012, to grant SNWA's application for 11,584 ac-ft/yr (14.3 million m^3/yr) of water (SNWA 2012a; NDWR 2012). Thus, the current estimate of unallocated water rights in the basin is approximately 50 ac-ft (0.06 million m^3).

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 Dry Lake Valley North SEZ and surrounding basin. Additional data regarding climate, surface water, and groundwater conditions are presented in Tables 11.4.9.1-1 through 11.4.9.1-7 and in Figures 11.4.9.1-1 and 11.4.9.1-2. 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 Dry Lake Valley North SEZ that are found to be within a 100-year floodplain will be identified as non-development areas. Any water features within the Dry Lake Valley North SEZ determined to be jurisdictional will be subject to the permitting process described in the CWA.

TABLE 11.4.9.1-1 Watershed and Water Management Basin Information Relevant to the Proposed Dry Lake Valley North SEZ as Revised

Basin	Name	Area (acres)[b]
Subregion (HUC4)[a]	Central Nevada Desert Basins (1606)	30,541,691
Cataloging unit (HUC8)	Dry Lake Valley (16060009)	1,397,948
Groundwater basin	Dry Lake Valley	564,480
SEZ	Dry Lake Valley North	28,726

[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 11.4.9.1-2 Climate Station Information Relevant to the Proposed Dry Lake Valley North 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.)
Caliente, Nevada (261358)	4,400	19	1903–2011	8.74	11.20
Hiko, Nevada (263671)	3,900	31	1989–2011	6.96	2.60
Key Pittman WMA, Nevada (264143)	3,950	29	1964–1989	7.94	1.50
Lake Valley Steward (264384)	6,352	35	1971–1998	15.69	61.60
Pioche, Nevada (266252)	6,166	18	1888–2011	13.60	35.10

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

[b] Surface elevations for the proposed Dry Lake Valley North SEZ range from 4,580 to 5,080 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 11.4.9.1-3 Total Lengths of Selected Streams at the Subregion, Cataloging Unit, and SEZ Scale Relevant to the Proposed Dry Lake Valley North 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	91,370	0
Intermittent/ephemeral streams	724,309,083	28,634,178	422,355
Canals	4,035,992	186,130	673

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

Source: USGS (2012a).

TABLE 11.4.9.1-4 Stream Discharge Information Relevant to the Proposed Dry Lake Valley North SEZ as Revised

Parameter	Station (USGS ID) Dry Lake Valley Tributary near Caliente, Nevada (10245270)
Period of record	1967–1981
No. of observations	15
Discharge, median (ft^3/s)[a]	0.6
Discharge, range (ft^3/s)	0–156
Discharge, most recent observation (ft^3/s)	0
Distance to SEZ (mi)[b]	14

[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 11.4.9.1-5 Surface Water Quality Data Relevant to the Proposed Dry Lake Valley North SEZ as Revised

Parameter	Station (USGS ID)[a]		
	375443114550501	381358114412201	381506114421801
Period of record	2004	2004	2004
No. of records	1	1	1
Temperature (°C)[b]	12.1	14.9	14.4
Total dissolved solids (mg/L)	226	314	317
Dissolved oxygen (mg/L)	8.3	5	6.9
pH	7.6	7	7.2
Total nitrogen (mg/L)	NA[c]	NA	NA
Phosphorus (mg/L as P)	NA	NA	NA
Organic carbon (mg/L)	NA	NA	NA
Calcium (mg/L)	36.7	67.1	68.1
Magnesium (mg/L)	7.98	13.3	12.2
Sodium (mg/L)	16.1	16.3	16.4
Chloride (mg/L)	13.9	22.5	24.9
Sulfate (mg/L)	15.9	20.9	18.1
Arsenic (µg/L)	NA	NA	NA

[a] Median values are listed.

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

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

Source: USGS (2102b).

11.4.9.2 Impacts

11.4.9.2.1 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 proposed Dry Lake Valley North SEZ could potentially affect drainage patterns, 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 alteration of the SEZ boundaries to exclude the 100-year floodplain area that included Dry Lake and two intermittent/ephemeral streams reduces the potential for adverse impacts associated with land disturbance activities.

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 the impacts associated with the disruption of intermittent/ephemeral

TABLE 11.4.9.1-6 Water Quality Data from Groundwater Samples Relevant to the Proposed Dry Lake Valley North SEZ as Revised

	Station (USGS ID)[a]
Parameter	380531114534201
Period of record	2003
No. of records	1
Temperature (°C)[b]	29.8
Total dissolved solids (mg/L)	377
Dissolved oxygen (mg/L)	0.2
pH	6.9
Nitrate + nitrite (mg/L as N)	0.05
Phosphate (mg/L)	0.031
Organic carbon (mg/L)	0.5
Calcium (mg/L)	79.7
Magnesium (mg/L)	30.1
Sodium (mg/L)	18.8
Chloride (mg/L)	6.37
Sulfate (mg/L)	21.1
Arsenic (µg/L)	11.5
Iron (µg/L)	1,890
Thallium (µg/L)	2.55

[a] Median values are listed.

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

Source: USGS (2012b).

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.

The study region considered for the intermittent/ephemeral stream evaluation relevant to the Dry Lake Valley North SEZ is a subset of the Dry Lake Valley watershed (HUC8), for which information regarding stream channels is presented in Tables 11.4.9.1-3 and 11.4.9.1-4 of this Final Solar PEIS. The results of the intermittent/ephemeral stream evaluation are shown in Figure 11.4.9.2-1, which depicts a subset of flow lines from the National Hydrography Dataset (USGS 2012a) labeled as having a low, moderate, or high sensitivity to land disturbance (Figure 11.4.9.2-1). The analysis indicated that 19% of the total length of the intermittent/ephemeral stream channel reaches in the evaluation had low sensitivity, and 81% had moderate sensitivity. Several intermittent/ephemeral channels within the SEZ were classified as having

TABLE 11.4.9.1-7 Groundwater Surface Elevations Relevant to the Proposed Dry Lake Valley North SEZ as Revised

Parameter	Station (USGS ID)		
	375624114444501	380336114473501	374536114443001
Period of record	1990–2011	2005–2010	1983–1990
Number of observations	14	5	2
Surface elevation (ft)[a]	4,692	5,000	4,675
Well depth (ft)	NA[c]	742	156
Depth to water, median (ft)	393.3	658.15	42.24
Depth to water, min/max (ft)	42.62–398.24	658–659.64	39.03–45.44
Depth to water, most recent observation (ft)	394.18	658.05	45.44
Distance to SEZ (mi)[b]	8	17	4

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

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

[c] NA = data not available.

Source: USGS (2012b).

moderate sensitivity to land disturbance. The northeastern potion of the SEZ has a particularly dense aggregation of intermittent/ephemeral channels classified as having moderate sensitivity to disturbance (Figure 11.4.9.2-1).

11.4.9.2.2 Water Use Requirements for Solar Energy Technologies

Changes in the Dry Lake Valley North boundaries resulted in significant changes to the estimated water use requirements during construction and operations. This section presents changes in water use estimates for the reduced SEZ area and additional analyses pertaining to groundwater. The additional analyses of groundwater 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.

Table 11.4.9.2-1 presents the revised estimates of water requirements for both construction and operation of solar facilities at the Dry Lake Valley North SEZ, assuming full build-out of the SEZ and accounting for its decreased size. A basin-scale groundwater budget was assembled by using available data on groundwater inputs, outputs, and storage; results are presented in Table 11.4.9.2-2.

The estimated total water use requirements during the peak construction year are as high as 2,814 ac-ft/yr (3.5 million m^3/yr), which is 56% of the low estimate of average annual recharge to the basin. Groundwater withdrawals are not reported for the basin, but currently

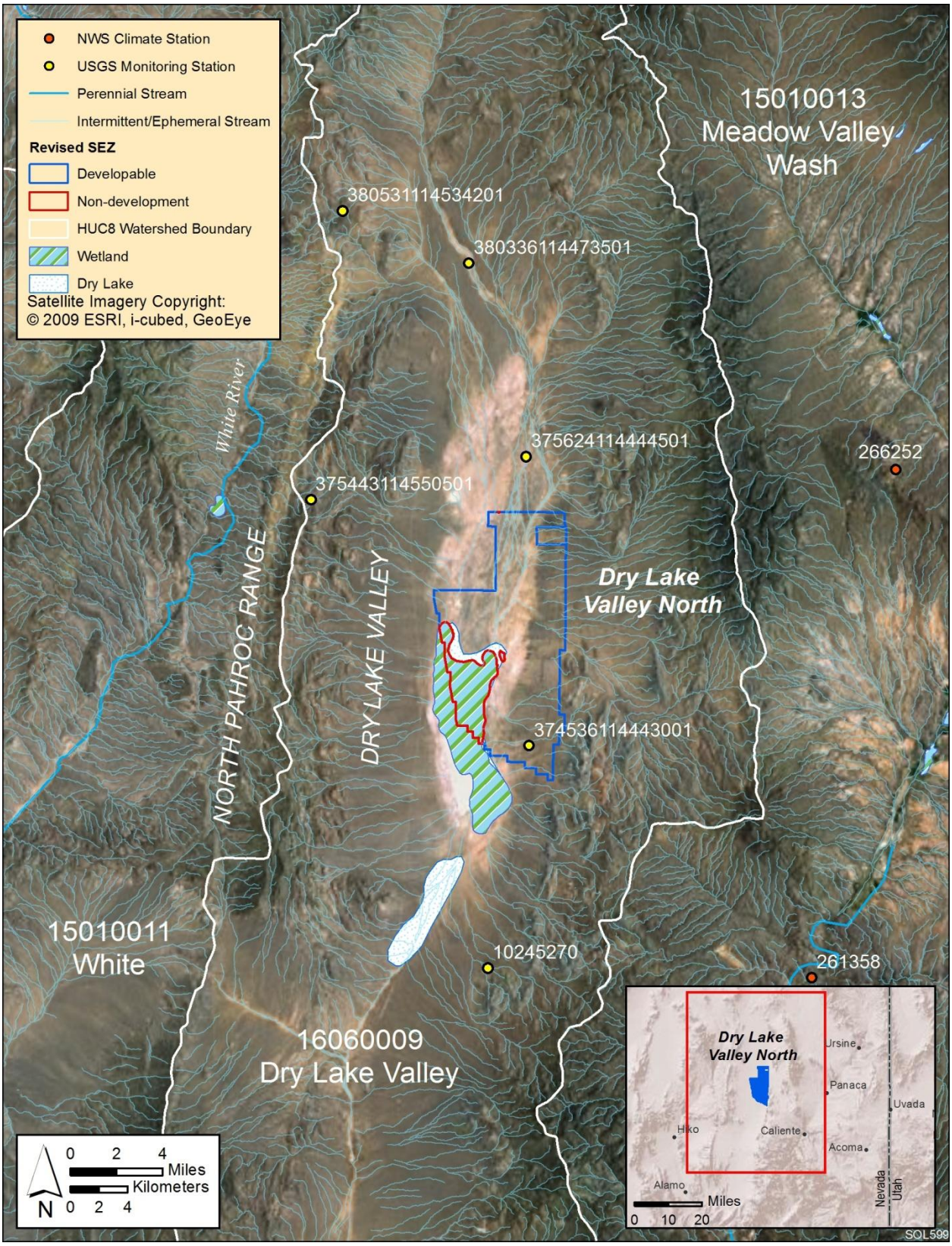

FIGURE 11.4.9.1-1 Water Features near the Proposed Dry Lake Valley North SEZ as Revised

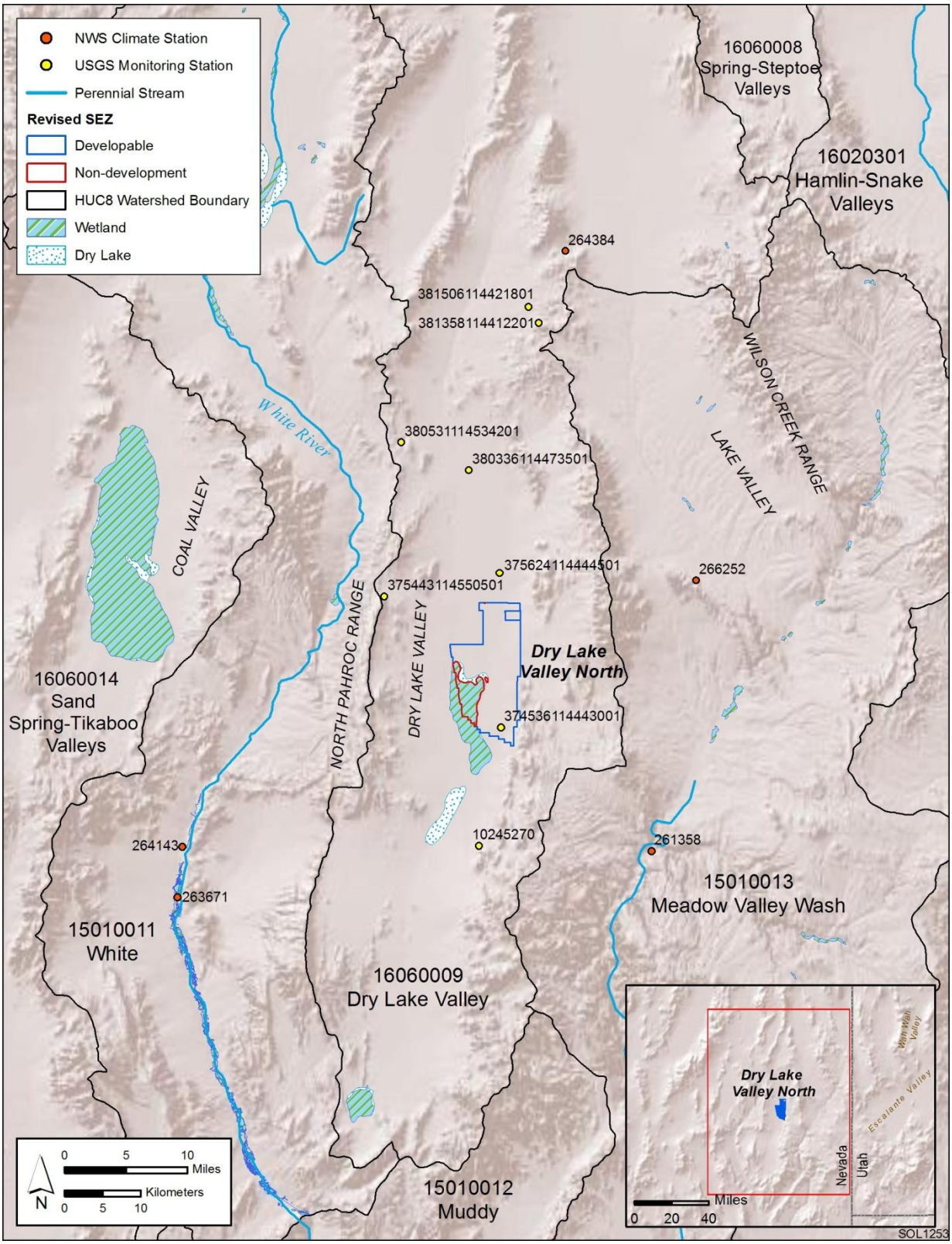

FIGURE 11.4.9.1-2 Water Features within the Dry Lake Valley Watershed, Which Includes the Proposed Dry Lake Valley North SEZ as Revised

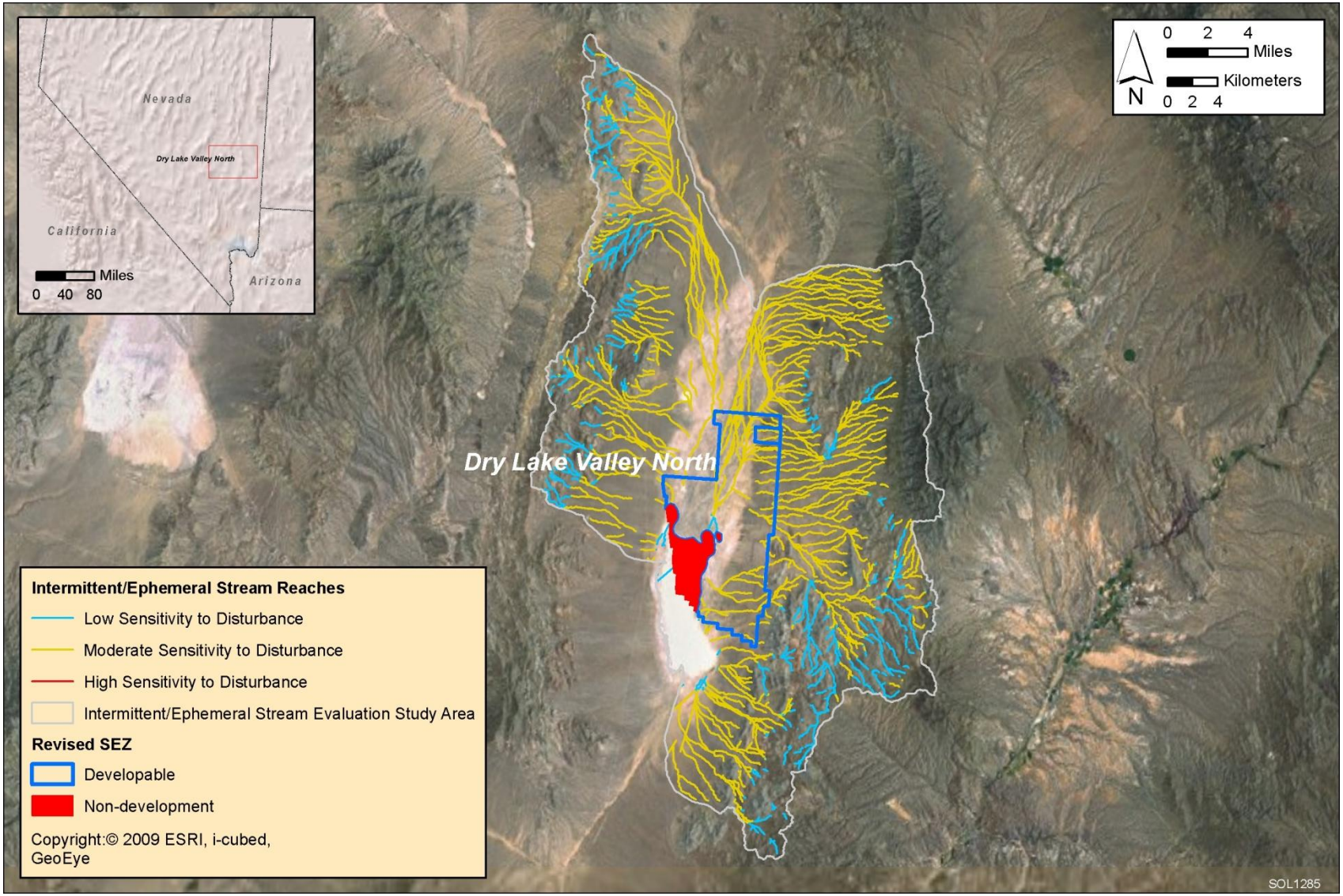

FIGURE 11.4.9.2-1 Intermittent/Ephemeral Stream Channel Sensitivity to Surface Disturbances in the Vicinity of the Proposed Dry Lake Valley North SEZ as Revised

TABLE 11.4.9.2-1 Estimated Water Requirements for the Proposed Dry Lake Valley North SEZ as Revised[a]

Activity	Parabolic Trough	Power Tower	Dish Engine	PV
Construction—Peak Year				
Water use requirements				
Fugitive dust control (ac-ft)[b]	1,816	2,724	2,724	2,724
Potable supply for workforce (ac-ft)	148	90	37	19
Total water use requirements (ac-ft)	1,964	2,814	2,761	2,743
Wastewater generated				
Sanitary wastewater (ac-ft)	148	90	37	19
Operations				
Water use requirements				
Mirror/panel washing (ac-ft/yr)	2,006	1,114	1,114	111
Potable supply for workforce (ac-ft/yr)	56	25	25	2
Dry cooling (ac-ft/yr)	802–4,011	446–2,228	NA	NA
Wet cooling (ac-ft/yr)	18,050–58,160	10,028–32,311	NA	NA
Total water use requirements				
Non-cooled technologies (ac-ft/yr)	NA[c]	NA	1,139	114
Dry-cooled technologies (ac-ft/yr)	2,864–6,073	1,585–3,367	NA	NA
Wet-cooled technologies (ac-ft/yr)	20,112–60,222	11,167–33,450	NA	NA
Wastewater generated				
Blowdown (ac-ft/yr)	1,139	633	NA	NA
Sanitary wastewater (ac-ft/yr)	56	25	25	2

[a] See Section M.9.2 of Appendix M and Tables 10.3.9.2-1 and 10.3.9.2-2 of the Draft Solar PEIS for methods used in estimating water use requirements.

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

[c] NA = not applicable.

the Dry Lake Valley basin has 12,649 ac-ft/yr (15.6 million m^3/yr) of permitted water rights (NDWR 2010, 2012). Given the short duration of construction activities, the water use estimate for construction is not a primary concern for water resources in the basin. The long duration of groundwater pumping during operations (20 years) poses a greater threat to groundwater resources. This analysis considered 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 proposed utility-scale solar energy facilities).

The low, medium, and high pumping scenarios result in groundwater withdrawals that range from 114 to 20,112 ac-ft/yr (0.14 to 24.8 million m^3/yr), or 2,280 to 402,220 ac-ft (2.8 to 496 million m^3) over the 20-year operational period. From a groundwater budgeting perspective,

TABLE 11.4.9.2-2 Groundwater Budget for the Garnet Valley Groundwater Basin, Which Includes the Proposed Dry Lake Valley North SEZ as Revised

Process	Amount
Inputs	
Recharge (ac-ft/yr)[a,b]	5,000–15,667[c,d,e]
Outputs	
Underflow to Delamar Valley (ac-ft/yr)	5,000[c]
Storage	
Perennial yield (ac-ft/yr)	12,700[f]

[a] Groundwater recharge includes mountain front, intermittent/ephemeral channel seepage, and direct infiltration recharge processes.

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

[c] Eakin (1963).

[d] Flint et al. (2004).

[e] NDWR (2008).

[f] Defined by NDWR.

Source: Rush (1968).

the high pumping scenario would represent four times the low estimate of groundwater recharge to the basin. The low and medium pumping scenarios have annual withdrawals that represent 2% and 57%, respectively, of the estimate of groundwater inputs to the basin (Table 11.4.9.2-2). Increases in groundwater extraction from the basin could impair other users and affect ecological habitats.

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 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 11.4.9.2-3) represent available literature data, and that the model aggregates these value ranges into a simplistic representation of the aquifer.

TABLE 11.4.9.2-3 Aquifer Characteristics and Assumptions Used in the One-Dimensional Groundwater Model for the Proposed Dry Lake Valley North SEZ as Revised

Parameter	Value
Aquifer type/conditions	Basin/unconfined
Aquifer thickness (ft)	6,560[b]
Hydraulic conductivity (ft/day)	4[c]
Transmissivity (ft^2/day)	26,200
Specific yield	0.1[c]
Analysis period (yr)	20
High pumping scenario (ac-ft/yr)[a]	20,112
Medium pumping scenario (ac-ft/yr)	2,864
Low pumping scenario (ac-ft/yr)	114

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

[b] Mankinen et al. (2008).

[c] Ertec Western, Inc. (1981).

Currently, the depth to groundwater ranges from 45 to 394 ft (14 to 120 m) in the vicinity of the SEZ (Table 11.4.9.1-7). The modeling results suggest that groundwater withdrawals for solar energy development would result in groundwater drawdown in the vicinity of the SEZ (approximately a 5-mi [8-km] radius) that ranges from 6 to more than 30 ft (1.8 to 9 m) for the high pumping scenario, 1 to 5 ft (0.3 to 1.5 m) for the medium pumping scenario, and less than 1 ft (0.3 m) for the low pumping scenario (Figure 11.4.9.2-2). The modeled groundwater drawdown for the high pumping scenario suggests a potential for 10 ft (3 m) of drawdown at a distance of 2 mi (3.2 km) from the center of the SEZ, which could impair groundwater-surface water connectivity via infiltration processes during channel inundation, along with alterations to the wetlands in the dry lake and the riparian vegetation along the unnamed intermittent/ ephemeral streams throughout the SEZ that drain toward the dry lake.

11.4.9.2.3 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.

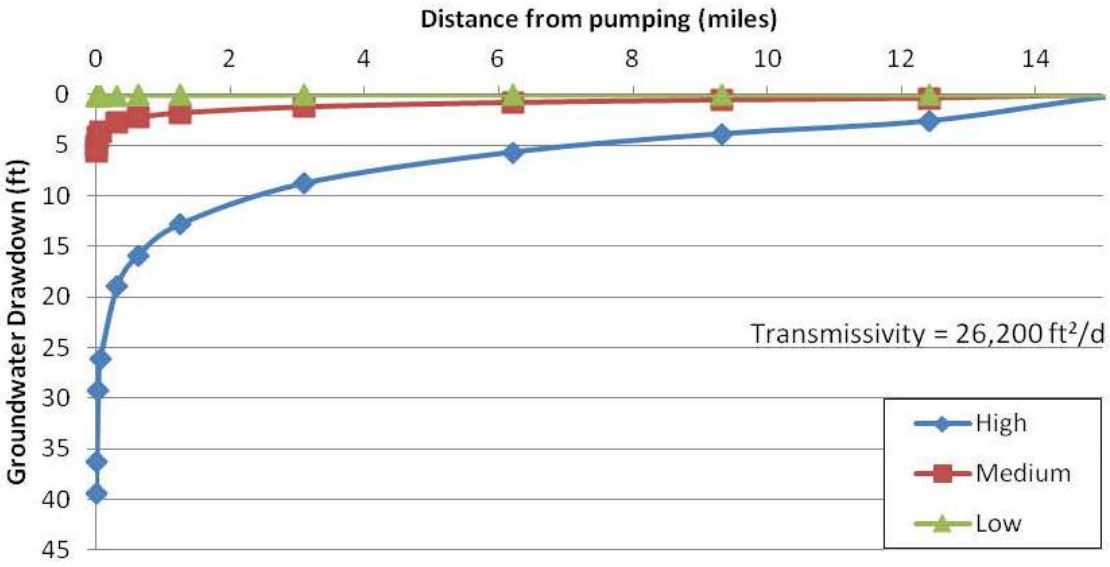

FIGURE 11.4.9.2-2 Estimated One-Dimensional Groundwater Drawdown Resulting from High, Medium, and Low Groundwater Pumping Scenarios over the 20-Year Operational Period at the Proposed Dry Lake Valley North SEZ as Revised

11.4.9.2.4 Summary of Impacts on Water Resources

The additional information and analyses of water resources presented in this update agree with the information provided in the Draft Solar PEIS, which indicates that the Dry Lake Valley North SEZ is located in a desert valley with predominantly intermittent/ephemeral surface water features and groundwater in a basin-fill aquifer overlaying a regional-scale carbonate rock aquifer system. The NDWR set the perennial yield for Dry Lake Valley at 12,700 ac-ft/yr (15.7 million m^3/yr), and this is the basis on which the NDWR (2012) has recently granted water rights that result in a full allocation of the perennial yield of the basin. These baseline conditions suggest that water resources are scarce in the vicinity of the Dry Lake Valley North SEZ and that the primary potential for impacts resulting from solar energy development comes from surface disturbances and groundwater use.

The change in boundaries of the Dry Lake Valley North SEZ resulted in a decrease in total water demand by approximately 65% for all technologies (Table 11.4.9.2-1), and the areas excluded from the SEZ contain the dry lake and the associated wetlands in the southwest corner of the SEZ as revised. These changes in the SEZ boundaries have reduced potential impacts on surface water features associated with groundwater withdrawal and surface disturbance.

Disturbance to intermittent/ephemeral stream channels within the Dry Lake Valley North SEZ could have an impact on the critical functions of groundwater recharge, sediment transport, flood conveyance, and ecological habitat in the vicinity of the SEZ. The intermittent/ephemeral stream evaluation suggests that several intermittent/ephemeral channels within the SEZ have a moderate sensitivity to disturbance. Surface disturbances within the Dry Lake Valley North SEZ could also lead to impacts within upstream and downstream reaches of unnamed

intermittent/ephemeral streams that flow through the SEZ. Several design features described in Section A.2.2. of Appendix A of this Final Solar PEIS specify measures to reduce impacts on intermittent/ephemeral water features.

The proposed water use requirements for full build-out scenarios at the Dry Lake Valley North SEZ indicate that the low pumping scenario is preferable, given that the medium and high pumping scenarios have the potential to greatly affect both the annual and long-term groundwater budget, and that the high pumping scenario may impair potential groundwater-surface water connectivity in Dry Lake and the unnamed intermittent/ephemeral streams throughout the SEZ. The availability of groundwater in the Dry Lake Valley North basin will largely depend on water rights availability and decisions made by the NDWR.

Predicting impacts associated with groundwater withdrawal in desert regions 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 a combination of monitoring and modeling to fully identify the temporal and spatial extent of potential impacts. The BLM is currently working on the development of a more detailed numerical groundwater model for the Dry Lake Valley North SEZ that would more accurately predict potential impacts on surface water features and groundwater drawdown. When the detailed model is completed, it will be made available through the project Web site (http://solareis.anl.gov) for use by applicants, the BLM, and other stakeholders.

11.4.9.3 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, updates to those analyses due to changes to the SEZ boundaries, and consideration of comments received as applicable, the following SEZ-specific design feature for water resources has been identified:

- Groundwater analyses suggest that full build-out of dry-cooled and wet-cooled technologies is not feasible; for mixed-technology development scenarios, any proposed dry- or 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.

11.4.10 Vegetation

11.4.10.1 Affected Environment

As presented in Section 11.4.10.1 of the Draft Solar PEIS, 13 cover types were identified within the area of the proposed Dry Lake Valley North SEZ, while 24 cover types were identified in the area of indirect impacts. Sensitive habitats on the SEZ include desert dry washes, wetland, and playa. As the result of the changes in SEZ boundaries and the access road assumption, the Inter-Mountain Basins Big Sagebrush Steppe, Undifferentiated Barren Land, Sonora-Mojave Creosotebush-White Bursage Desert Scrub, and North American Arid West Emergent Marsh cover types no longer occur within the SEZ. Also, the Inter-Mountain Basins Curl-leaf Mountain Mahogany woodland and Shrubland, Inter-Mountain Basins Subalpine Limber-Bristlecone Pine Woodland, Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland, Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland, Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland, Southern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest and Woodland cover types no longer occur within the indirect impact area (access road corridor and within 5 mi (8 km) of the SEZ boundary). Figure 11.4.10.1-1 shows the cover types within the affected area of the Dry Lake Valley North SEZ as revised.

11.4.10.2 Impacts

As presented in the Draft Solar PEIS, the construction of solar energy facilities within the proposed Dry Lake Valley North 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 boundaries, approximately 20,055 acres (81 km^2) would be cleared. In addition, approximately 58 acres (0.2 km^2) could be directly affected by the assumed access road, although the new access road corridor includes an existing gravel road that could be upgraded.

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.

11.4.10.2.1 Impacts on Native Species

The analysis presented in the Draft Solar PEIS for the original Dry Lake Valley North SEZ boundaries indicated that development would result in a large impact on five land cover types, a moderate impact on two land cover types, and a small impact on all other land cover types occurring within the SEZ (Table 11.4.10.1-1 in the Draft Solar PEIS). Development within the revised Dry Lake Valley North SEZ could still directly affect most of the cover types

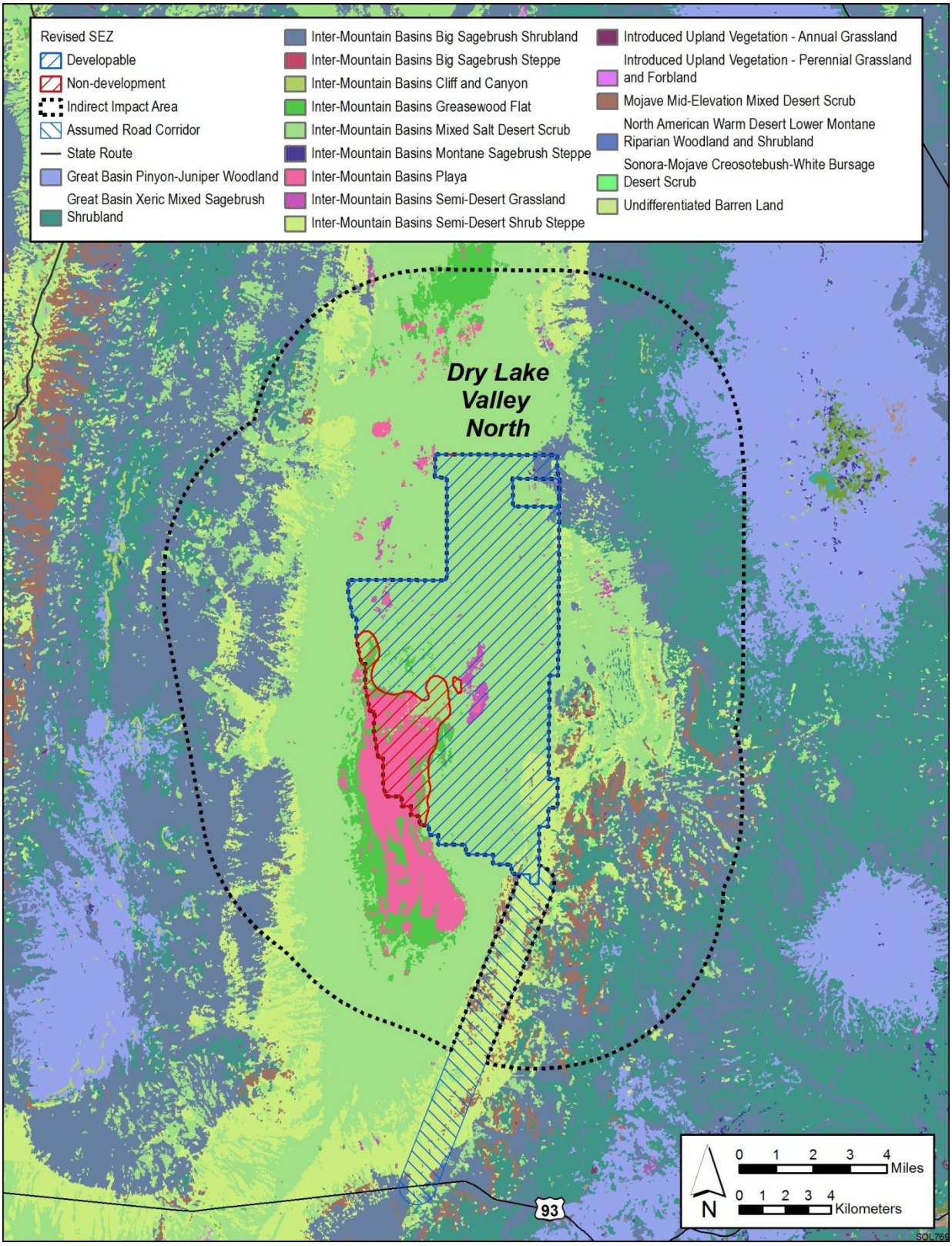

FIGURE 11.4.10.1-1 Land Cover Types within the Proposed Dry Lake Valley North SEZ as Revised

evaluated in the Draft Solar PEIS, with the exception of Inter-Mountain Basins Big Sagebrush Steppe (previously large impact), Undifferentiated Barren Land (previously large impact), Sonora-Mojave Creosotebush-White Bursage Desert Scrub, and North American Arid West Emergent Marsh; the reduction in the developable area would result in reduced impact levels on all cover types in the affected area. The impact magnitude on Inter-Mountain Basins Playa (previously large impact), Inter-Mountain Basins Semi-Desert Shrub Steppe (previously moderate impact), and Inter-Mountain Basins Greasewood Flat (previously moderate impact), would be reduced to a small impact; Inter-Mountain Basins Mixed Salt Desert Scrub (previously large impact) and Inter-Mountain Basins Semi-Desert Grassland (previously large impact) would be reduced to a moderate impact. The impact magnitudes on all other cover types would remain unchanged compared to original estimates in the Draft Solar PEIS.

The Inter-Mountain Basins Cliff and Canyon, Sonora-Mojave Creosotebush-White Bursage Desert Scrub, and Inter-Mountain Basins Greasewood Flat cover types, previously not directly affected by the access road, could be directly affected by the access road because of the revised route. However, the Inter-Mountain Basins Big Sagebrush Steppe cover type would no longer be directly affected by the access road. Because of the change in the indirect impact area assumed location, the Inter-Mountain Basins Curl-leaf Mountain Mahogany woodland and Shrubland, Inter-Mountain Basins Subalpine Limber-Bristlecone Pine Woodland, Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland, Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland, Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland, Southern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest and Woodland cover types would not be indirectly affected.

Indirect impacts on habitats associated with the playa, wetlands, or dry washes, including Coyote Wash, within or near the SEZ, as described in the Draft Solar PEIS, could occur. The indirect impacts from groundwater use on plant communities in the region that depend on groundwater could also occur.

11.4.10.2.2 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 Dry Lake Valley North SEZ could potentially result in the establishment or expansion of noxious weeds and invasive species populations, potentially including those species listed in Section 11.4.10.1 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.

11.4.10.3 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 wetlands within the SEZ, and dry washes within the access road corridor 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 dry wash, playa, marsh, scrub-shrub wetland, riparian, and greasewood flat habitats, including occurrences downstream of solar projects or assumed access road, 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 groundwater-dependent communities, habitats dependent on springs associated with the Dry Lake Valley basin, Delamar Valley Basin, or other hydrologically connected basins. Potential impacts on springs shall be determined through hydrological studies.

It is anticipated that implementation of these programmatic design features will reduce a high potential for impacts from invasive species and impacts on dry washes, playas, springs, riparian habitats, and wetlands 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, updates to those analyses due to changes to the SEZ boundaries, 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.

11.4.11 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.

11.4.11.1 Amphibians and Reptiles

11.4.11.1.1 Affected Environment

As presented in Section 11.4.11.1 of the Draft Solar PEIS, representative amphibian and reptile species expected to occur within the Dry Lake Valley North 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*), side-blotched lizard (*Uta stansburiana*), 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*), nightsnake (*Hypsiglena torquata*), and sidewinder (*Crotalus cerastes*). The reduction in the size of the Dry Lake Valley North SEZ does not alter the potential for these species to occur in the affected area.

11.4.11.1.2 Impacts

As presented in the Draft Solar PEIS, solar energy development within the Dry Lake Valley North SEZ could affect potentially suitable habitats for the representative amphibian and reptile species. The analysis presented in the Draft Solar PEIS for the original Dry Lake Valley North SEZ boundaries indicated that development would result in a small impact on the side-blotched lizard, coachwhip, glossy snake, gophersnake, groundsnake, and sidewinder; and a moderate impact on the remainder of the representative amphibian and reptile species (Table 11.4.11.1-1 in the Draft Solar PEIS). The reduction in the developable area of the Dry Lake Valley North SEZ would result in reduced habitat impacts for all representative amphibian and reptile species. The resultant impact levels for most of the representative amphibian and reptile species would be small except for the Great Basin collared lizard and zebra-tailed lizard, for which the impact levels would remain moderate.

11.4.11.1.3 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.

Because of the changes to the SEZ boundaries, the SEZ-specific design feature identified in Section 11.4.11.1.3 of the Draft Solar PEIS (i.e., dry lake and wash habitats should be avoided) is no longer applicable. On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those analyses due to changes to the SEZ boundaries, and consideration of comments received as applicable, no SEZ-specific design features for amphibians and reptile species 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.

11.4.11.2 Birds

11.4.11.2.1 Affected Environment

As presented in Section 11.4.11.2.1 of the Draft Solar PEIS, a large number of bird species could occur or have potentially suitable habitat within the affected area of the proposed Dry Lake Valley North 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*), black-throated sparrow (*Amphispiza bilineata*), cactus wren (*Campylorhynchus brunneicapillus*), common poorwill (*Phalaenoptilus nuttallii*), common raven (*Corvus corax*), Costa's hummingbird (*Calypte costae*), 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*), verdin (*Auriparus flaviceps*), 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*), white-winged dove (*Zenaida asiatica*), and wild turkey (*Meleagris gallopavo*). The reduction in the size of the Dry Lake Valley North SEZ does not alter the potential for these species or other bird species to occur in the affected area.

11.4.11.2.2 Impacts

As presented in the Draft Solar PEIS, solar energy development within the Dry Lake Valley North SEZ could affect potentially suitable bird habitats. The analysis presented in the Draft Solar PEIS based on the original Dry Lake Valley North SEZ boundaries indicated that development would result in a small impact on Bewick's wren, black-throated sparrow, cactus wren, Costa's hummingbird, Say's phoebe, verdin, Gambel's quail, white-winged dove, and wild turkey; and a moderate impact on the remainder of the representative bird species (Table 11.4.11.2-1 in the Draft Solar PEIS). The reduction in the developable area of the Dry Lake Valley North SEZ would result in reduced habitat impacts for all representative bird species. The resultant impact levels for most of the representative bird species would be small except for the Le Conte's thrasher, for which the impact level would remain moderate.

11.4.11.2.3 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.

Because of the change in boundaries of the SEZ, the SEZ-specific design feature identified in Section 11.4.11.2.3 of the Draft Solar PEIS (i.e., dry lake and wash habitats should be avoided) is no longer applicable. On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those analyses due to changes to the SEZ boundaries, and consideration of comments received as applicable, no SEZ-specific design features for birds 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.

11.4.11.3 Mammals

11.4.11.3.1 Affected Environment

As presented in Section 11.4.11.3.1 of 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 Dry Lake Valley North 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*), long-legged myotis (*M. volans*), silver-haired bat (*Lasionycteris noctivagans*), and western pipistrelle (*Parastrellus hesperus*). The reduction in the size of the Dry Lake Valley North SEZ does not alter the potential for these species or any additional mammal species to occur in the affected area.

11.4.11.3.2 Impacts

As presented in the Draft Solar PEIS, solar energy development within the Dry Lake Valley North SEZ could affect potentially suitable habitats of mammal species. The analysis presented in the Draft Solar PEIS based on the original Dry Lake Valley North SEZ boundaries indicated that development would result in a small impact on elk, pronghorn, bobcat, red fox, cactus mouse, canyon mouse, hoary bat, and northern grasshopper mouse; and a moderate impact on the remainder of the representative mammal species analyzed (Table 11.4.11.3-1 in the Draft Solar PEIS). On the basis of mapped activity areas, up to 61,499 acres (248.9 km^2) of year-round

pronghorn habitat would be directly affected by solar energy development within the SEZ (Figure 11.4.11.3-3 of the Draft Solar PEIS). This is about 3.2% of the year-round habitat mapped within the SEZ region and would be considered a moderate impact. Because of the reduction in size of the Dry Lake Valley North SEZ, only 20,055 acres (81.2 km^2) of year-round habitat would be affected. This is about 1.0% of the year-round habitat mapped within the SEZ region and would be considered a small impact. The reduction in the developable area of the Dry Lake Valley North SEZ would result in reduced habitat impacts for all representative mammal species. Resultant impact levels for most of the representative mammal species would be small except for the desert shrew and southern grasshopper mouse, for which impact levels would remain moderate.

11.4.11.3.3 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 and the applicable SEZ-specific design features, impacts on mammal species will be reduced.

Because of the change in boundaries of the SEZ, one of the SEZ-specific design features identified in Section 11.4.11.3.3 of the Draft Solar PEIS (i.e., playa and wash habitats should be avoided) is no longer applicable. On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those analyses due to changes to the SEZ boundaries, and consideration of comments received as applicable, the following SEZ-specific design feature for mammals has been identified:

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

If SEZ-specific design features are implemented in addition to 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.

11.4.11.4 Aquatic Biota

11.4.11.4.1 Affected Environment

There are no perennial surface water bodies or perennial streams within the proposed Dry Lake Valley North SEZ or within the assumed road corridor. The boundaries of the Dry Lake Valley North SEZ have been reduced compared to the boundaries given in the Draft Solar PEIS. On the basis of these changes, updates to the Draft Solar PEIS include:

- 6 mi (10 km) of the intermittent/ephemeral Coyote Wash and 2 mi (3 km) of unnamed washes cross through the SEZ.

- 938 acres (4 km^2) of an unnamed dry lake is present within the SEZ.

- 3,477 acres (14 km^2) of dry lake and 18 mi (29 km) of intermittent washes are located within the area of SEZ indirect effects within 5-mi (8 km) of the SEZ.

- Outside of the potential indirect effects area, but within 50 mi (80 km) of the SEZ, are 146 mi (235 km) of perennial stream and 403 mi (649 km) of intermittent streams.

Aquatic biota present in the surface water features in the SEZ have not been characterized. 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, in washes, dry lakes, and wetlands within the SEZ.

11.4.11.4.2 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 and Final Solar PEIS. Aquatic habitats 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 updates:

- The amount of surface water features within the Dry Lake Valley North SEZ that could potentially be affected by solar energy development is less because the size of the SEZ has been reduced.

- The dry lakes and associated wetlands within the Dry Lake Valley North SEZ have been identified as non-development areas; therefore, construction activities would not directly affect these features. However, as described in the Draft Solar PEIS, the wetlands could be affected indirectly by solar development activities within the SEZ.

11.4.11.4.3 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 guide how programmatic design features are applied, for example:

- Appropriate engineering controls shall be implemented to minimize the amount of contaminants and sediment entering Coyote Wash and the unnamed washes and dry lakes within the SEZ.

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

It is anticipated that implementation of the 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 Dry Lake Valley North SEZ would be small.

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

11.4.12 Special Status Species

11.4.12.1 Affected Environment

As presented in the Draft Solar PEIS, 22 special status species were identified that could occur or have potentially suitable habitat within the affected area of the proposed Dry Lake Valley North SEZ. The reduction in the size of the Dry Lake Valley North SEZ does not alter the potential for these species to occur in the affected area, but it may reduce the magnitude of impacts for some species with moderate or large impacts as determined in the Draft Solar PEIS. The 13 special status species that were determined to have moderate or large impacts in the Draft Solar PEIS are re-evaluated here. Groundwater-dependent species are not discussed here, because the changes to the SEZ boundary are not assumed to alter the impact determination for groundwater-dependent species. The 13 special status species re-evaluated in this section are (1) plants: Blaine fishhook cactus (*Sclerocactus blaneii*), Eastwood milkvetch (*Asclepias eastwoodiana*), long-calyx milkvetch (*Astragalus oophorus* var. *lonchocalyx*), Needle Mountains milkvetch (*Astragalus eurylobus*), Pioche blazingstar (*Mentzelia argillicola*), and Tiehm blazingstar (*Mentzelia tiehmii*); (2) birds: prairie falcon (*Falco mexicanus*), western burrowing owl (*Athene cunicularia hypugaea*), and western snowy plover (*Charadrius alexandrinus nivosus*); and (3) mammals: Desert Valley kangaroo mouse (*Microdipodops megacephalus albiventer*), fringed myotis (*Myotis thysanodes*), Pahranagat Valley montane vole (*Microtus montanus fucosus*), and western small-footed myotis (*Myotis ciliolabrum*).

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) birds: golden eagle, gray vireo (*Vireo vicinior*), loggerhead shrike, and long-eared owl; and (2) mammals: big brown bat, Brazilian free-tailed bat, California myotis, hoary bat, long-legged myotis, silver-haired bat, and western pipistrelle. These additional species are discussed below, along with a re-evaluation of those species determined to have moderate or large impacts in the Draft Solar PEIS.

Blaine Fishhook Cactus. The Blaine fishhook cactus is a small cactus endemic to southeastern Nevada and southwestern Utah, where it occurs on alkaline substrates and volcanic gravels in valley bottoms. This species was analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. Only three occurrences of this species are currently known. One of these occurrences is in the Dry Lake Valley (Stout 2009). Potentially suitable habitat for this species occurs on the Dry Lake Valley North SEZ and in other portions of the affected area (Table 11.4.12.1-1).

Eastwood Milkweed. The Eastwood milkweed is a perennial forb endemic to Nevada from public and private lands in Esmeralda, Lander, Lincoln, and Nye Counties. This species was analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. It occurs in open areas on a wide variety of basic (pH usually >8) soils, including calcareous clay knolls, sand, carbonate or basaltic gravels, washes, or shale outcrops at elevations between 4,700 and 7,100 ft (1,430 and 2,150 m). The species is known to occur on the SEZ. Potentially suitable habitat for this species occurs on the Dry Lake Valley North SEZ, assumed access road corridor, and other portions of the affected area (Table 11.4.12.1-1).

Long-Calyx Milkvetch. The long-calyx milkvetch is a perennial forb regionally endemic to the Great Basin in southwestern Utah and eastern Nevada. This species was analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. It occurs in pinyon-juniper woodlands, sagebrush, and mixed shrub communities at elevations between 5,800 and 7,500 ft (1,760 and 2,290 m). The species is known to occur 8 mi (13 km) east of the SEZ. Potentially suitable habitat for this species occurs on the Dry Lake Valley North SEZ, assumed access road corridor, and other portions of the affected area (Table 11.4.12.1-1).

Needle Mountains Milkvetch. The Needle Mountains milkvetch is a perennial forb that occurs on gravel washes and sandy soils in alkaline desert and arid grasslands at elevations between 4,250 and 6,250 ft (1,295 and 1,900 m). This species was analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. The species is known to occur about 15 mi (24 km) southeast of the SEZ. Potentially suitable habitat for this species occurs on the Dry Lake Valley North SEZ and other portions of the affected area (Table 11.4.12.1-1).

Pioche Blazingstar. The Pioche blazingstar is a perennial forb endemic to Nevada. This species was analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. It occurs on dry, soft, silty clay soils on knolls and slopes with sparse vegetation consisting mainly of

TABLE 11.4.12.1-1 Habitats, Potential Impacts, and Potential Mitigation for Special Status Species That Could Be Affected by Solar Energy Development on the Proposed Dry Lake Valley North SEZ as Revised[a]

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]			Overall Impact Magnitude[h] and Species-Specific Mitigation[i]
				Within SEZ (Direct Effects)[e]	Access Road (Direct Effects)[f]	Outside SEZ (Indirect Effects)[g]	
Plants							
Blaine fishhook cactus[j]	***Sclerocactus blaneii***	BLM-S; NV-P; FWS-SC; NV-S1	Endemic to southeastern Nevada and southwestern Utah on alkaline substrates and volcanic gravels in valley bottoms. Elevation ranges between 5,100 and 5,300 ft.[k] There are only three known occurrences of this species. One of these occurrences is located in the Dry Lake Valley. About 20,150 acres[l] of potentially suitable habitat occurs within the SEZ region.	132 acres of potentially suitable habitat lost (0.7% of available potentially suitable habitat)	0 acres	3,500 acres of potentially suitable habitat (17.4% of available potentially suitable habitat)	Small overall impact. Avoiding or minimizing disturbance to playa habitat could reduce impacts. In addition, pre-disturbance surveys and avoidance or minimization of disturbance to occupied habitats in the area of direct effects; translocation of individuals from the area of direct effects; or compensatory mitigation of direct effects on occupied habitats could reduce impacts.

TABLE 11.4.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]			Overall Impact Magnitude[h] and Species-Specific Mitigation[i]
				Within SEZ (Direct Effects)[e]	Access Road (Direct Effects)[f]	Outside SEZ (Indirect Effects)[g]	
Plants (Cont.)							
Eastwood milkweed	***Asclepias eastwoodiana***	BLM-S; FWS-SC; NV-S2	Endemic to Nevada on public and private lands in Esmeralda, Lander, Lincoln, and Nye Counties in open areas on a wide variety of basic (pH usually >8) soils, including calcareous clay knolls, sand, carbonate, or basaltic gravels, or shale outcrops, generally barren and lacking competition. Frequently in small washes or other moisture-accumulating microsites at elevations between 4,700 and 7,100 ft. Known to occur on the SEZ. About 413,100 acres of potentially suitable habitat occurs within the SEZ region.	1,865 acres of potentially suitable habitat lost (0.5% of available potentially suitable habitat)	5 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	27,800 acres of potentially suitable habitat (6.7% of available potentially suitable habitat)	Small overall impact. Pre-disturbance surveys and avoidance or minimization of disturbance to occupied habitats in the area of direct effects; translocation of individuals from the area of direct effects; or compensatory mitigation of direct effects on occupied habitats could reduce impacts. Note that these same potential mitigations apply to all special status plants.

TABLE 11.4.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]			Overall Impact Magnitude[h] and Species-Specific Mitigation[i]
				Within SEZ (Direct Effects)[e]	Access Road (Direct Effects)[f]	Outside SEZ (Indirect Effects)[g]	
Plants (Cont.)							
Long-calyx milkvetch	*Astragalus oophorus var. lonchocalyx*	BLM-S; FWS-SC; NV-S2	Regionally endemic to the Great Basin in western Utah and eastern Nevada in pinyon-juniper woodlands, sagebrush, and mixed shrub communities at elevations between 5,800 and 7,500 ft. Nearest recorded occurrence is 8 mi[m] east of the SEZ. About 4,350,000 acres of potentially suitable habitat occurs within the SEZ region.	18,000 acres of potentially suitable habitat lost (0.4% of available potentially suitable habitat)	40 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	124,000 acres of potentially suitable habitat (2.9% of available potentially suitable habitat)	Small overall impact. See Eastwood milkweed for a list of other potential mitigations.
Needle Mountains milkvetch	*Astragalus eurylobus*	BLM-S; FWS-SC; NV-S2	Gravel washes and sandy soils in alkaline desert and arid grasslands at elevations between 4,250 and 6,250 ft. Nearest recorded occurrence is 15 mi southeast of the SEZ. About 42,100 acres of potentially suitable habitat occurs within the SEZ region.	500 acres of potentially suitable habitat lost (1.2% of available potentially suitable habitat)	0 acres	7,250 acres of potentially suitable habitat (17.2% of available potentially suitable habitat)	Moderate overall impact. Avoiding or minimizing disturbance to playa habitat could reduce impacts. In addition, see the Eastwood milkweed for a list of other potential mitigations.

TABLE 11.4.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]			Overall Impact Magnitude[h] and Species-Specific Mitigation[i]
				Within SEZ (Direct Effects)[e]	Access Road (Direct Effects)[f]	Outside SEZ (Indirect Effects)[g]	
Plants (Cont.)							
Pioche blazingstar	*Mentzelia argillicola*	BLM-S; NV-S1	Endemic to Nevada on dry, soft, silty clay soils on knolls and slopes with sparse vegetation consisting mainly of sagebrush. Nearest recorded occurrence is from Patterson Wash, approximately 12 mi east of the SEZ. About 2,869,000 acres of potentially suitable habitat occurs within the SEZ region.	20,000 acres of potentially suitable habitat lost (0.7% of available potentially suitable habitat)	46 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	146,250 acres of potentially suitable habitat (5.1% of available potentially suitable habitat)	Small overall impact. See Eastwood milkweed for a list of other potential mitigation.
Tiehm blazingstar	*Mentzelia tiehmii*	BLM-S; NV-S1	Endemic to Nevada on hilltops of white soil, sparsely vegetated white calcareous knolls and bluffs with scattered perennials. Nearest recorded occurrence is from the White River, approximately 7 mi west of the SEZ. About 2,326,100 acres of potentially suitable habitat occurs within the SEZ region.	20,000 acres of potentially suitable habitat lost (0.9% of available potentially suitable habitat)	40 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	120,000 acres of potentially suitable habitat (5.2% of available potentially suitable habitat)	Small overall impact. See Eastwood milkweed for a list of other potential mitigations.

TABLE 11.4.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]			Overall Impact Magnitude[h] and Species-Specific Mitigation[i]
				Within SEZ (Direct Effects)[e]	Access Road (Direct Effects)[f]	Outside SEZ (Indirect Effects)[g]	
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 4,900,000 acres of potentially suitable habitat occurs within the SEZ region.	24,890 acres of potentially suitable habitat lost (0.5% of available potentially suitable habitat)	60 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	143,800 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.
Gray vireo	*Vireo vicinior*	BLM-S	An uncommon summer resident in arid environments such as pinyon-juniper, chaparral, and desert shrublands. Builds open-cup nests of plant material in forked branches of shrubs or small trees. About 1,625,000 acres of potentially suitable habitat occurs within the SEZ region.	0 acres	0 acres	3,150 acres of potentially suitable habitat (0.2% of available potentially suitable habitat)	Small overall impact; no direct effects. No species-specific mitigation is warranted.

TABLE 11.4.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]			Overall Impact Magnitude[h] and Species-Specific Mitigation[i]
				Within SEZ (Direct Effects)[e]	Access Road (Direct Effects)[f]	Outside SEZ (Indirect Effects)[g]	
Birds (Cont.)							
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 5,000,000 acres of potentially suitable habitat occurs within the SEZ region.	24,900 acres of potentially suitable habitat lost (0.5% of available potentially suitable habitat)	60 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	140,000 acres of potentially suitable habitat (2.8% 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.
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 4,870,000 acres of potentially suitable habitat occurs within the SEZ region.	24,890 acres of potentially suitable habitat lost (0.5% of available potentially suitable habitat)	60 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	149,450 acres of potentially suitable habitat (3.1% 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 11.4.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]			Overall Impact Magnitude[h] and Species-Specific Mitigation[i]
				Within SEZ (Direct Effects)[e]	Access Road (Direct Effects)[f]	Outside SEZ (Indirect Effects)[g]	
Birds (Cont.)							
Prairie falcon	*Falco mexicanus*	BLM-S	Year-round resident in open habitats in mountainous areas, steppe, grasslands, or cultivated areas. Typically nests in well-sheltered ledges of rocky cliffs and outcrops. Known to occur in Lincoln County, Nevada. About 1,690,150 acres of potentially suitable habitat occurs within the SEZ region.	24,000 acres of potentially suitable habitat lost (1.4% of available potentially suitable habitat)	30 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	140,000 acres of potentially suitable habitat (8.2% of available potentially suitable habitat)	Moderate overall 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 effect.
Western burrowing owl	*Athene cunicularia hypugaea*	BLM-S; FWS-SC	Summer breeding resident in open grasslands and prairies, as well as disturbed sites such as golf courses, cemeteries, and airports. Nests in burrows constructed by mammals (especially prairie dogs and badgers). Known to nest on or in the vicinity of the SEZ. About 3,159,500 acres of potentially suitable habitat occurs within the SEZ region.	24,600 acres of potentially suitable habitat lost (0.8% of available potentially suitable habitat)	50 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	145,000 acres of potentially suitable habitat (4.6% of available potentially suitable habitat)	Small overall impact on foraging and nesting habitat. Pre-disturbance surveys and avoidance or minimization of disturbance to occupied burrows in the area of direct effects or compensatory mitigation of direct effects on occupied habitats could reduce impacts.

TABLE 11.4.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]			Overall Impact Magnitude[h] and Species-Specific Mitigation[i]
				Within SEZ (Direct Effects)[e]	Access Road (Direct Effects)[f]	Outside SEZ (Indirect Effects)[g]	
Birds (Cont.)							
Western snowy plover	*Charadrius alexandrinus nivosus*	BLM-S; NV-P	Summer breeding resident on alkali flats around reservoirs and sandy shorelines. Nearest recorded occurrence is from the Adams-McGill Reservoir, approximately 23 mi northwest of the SEZ. About 66,000 acres of potentially suitable habitat occurs within the SEZ region.	250 acres of potentially suitable habitat lost (0.4% of available potentially suitable habitat)	0 acres	5,000 acres of potentially suitable habitat (7.5% of available potentially suitable habitat)	Small overall impact on foraging and nesting habitat. Pre-disturbance surveys and avoidance or minimization of disturbance to playa habitats and other occupied habitats in the area of direct effects (particularly associated with the playa habitat on the SEZ) or compensatory mitigation of direct effects on occupied habitats could reduce impacts.

TABLE 11.4.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]			Overall Impact Magnitude[h] and Species-Specific Mitigation[i]
				Within SEZ (Direct Effects)[e]	Access Road (Direct Effects)[f]	Outside SEZ (Indirect Effects)[g]	
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 2,673,000 acres of potentially suitable habitat occurs within the SEZ region.	24,840 acres of potentially suitable habitat lost (0.9% of available potentially suitable habitat)	50 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	89,200 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.
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 4,120,000 acres of potentially suitable habitat occurs within the SEZ region.	25,050 acres of potentially suitable habitat lost (0.6% of available potentially suitable habitat)	53 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	120,000 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 11.4.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]			Overall Impact Magnitude[h] and Species-Specific Mitigation[i]
				Within SEZ (Direct Effects)[e]	Access Road (Direct Effects)[f]	Outside SEZ (Indirect Effects)[g]	
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 use buildings, mines, and hollow trees. About 2,550,000 acres of potentially suitable habitat occurs within the SEZ region.	25,050 acres of potentially suitable habitat lost (1.0% of available potentially suitable habitat)	53 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	117,000 acres of potentially suitable habitat (4.6% of available potentially suitable habitat)	Moderate 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 11.4.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]			Overall Impact Magnitude[h] and Species-Specific Mitigation[i]
				Within SEZ (Direct Effects)[e]	Access Road (Direct Effects)[f]	Outside SEZ (Indirect Effects)[g]	
Mammals (Cont.)							
Desert Valley kangaroo mouse	***Microdipodops megacephalus albiventer***	BLM-S; NV-P; FWS-SC; NV-S2	Endemic to central Nevada in desert areas at playa margins and in dune habitats. Known to occur on the SEZ in association with the dry lake along the southwestern portion of the SEZ. About 1,257,700 acres of potentially suitable habitat occurs within the SEZ region.	24,000 acres of potentially suitable habitat lost (1.9% of available potentially suitable habitat)	17 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	60,000 acres of potentially suitable habitat (4.8% of available potentially suitable habitat)	Moderate overall impact. Avoiding or minimizing disturbance to playa habitats within the SEZ could reduce impacts. In addition, pre-disturbance surveys and avoidance or minimization of disturbance to occupied habitats in the areas of direct effects or compensatory mitigation of direct effects on occupied habitats could reduce impacts.

TABLE 11.4.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]			Overall Impact Magnitude[h] and Species-Specific Mitigation[i]
				Within SEZ (Direct Effects)[e]	Access Road (Direct Effects)[f]	Outside SEZ (Indirect Effects)[g]	
Mammals (Cont.)							
Fringed myotis	*Myotis thysanodes*	BLM-S; NV-P; FWS-SC; NV-S2	Year-round resident in a wide range of habitats, including lowland riparian, desert shrub, pinyon-juniper, and sagebrush habitats. Roosts in buildings and caves. Known to occur in Lincoln County, Nevada. About 4,650,000 acres of potentially suitable habitat occurs within the SEZ region.	410 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	10 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	80,000 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 effect.
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 2,100,000 acres of potentially suitable habitat occurs within the SEZ region.	24,000 acres of potentially suitable habitat lost (1.1% of available potentially suitable habitat)	45 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	65,000 acres of potentially suitable habitat (3.1% 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 effect.

TABLE 11.4.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]			Overall Impact Magnitude[h] and Species-Specific Mitigation[i]
				Within SEZ (Direct Effects)[e]	Access Road (Direct Effects)[f]	Outside SEZ (Indirect Effects)[g]	
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 2,730,000 acres of potentially suitable habitat occurs within the SEZ region.	24,850 acres of potentially suitable habitat lost (0.9% of available potentially suitable habitat)	51 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	90,000 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 effect.

TABLE 11.4.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]			Overall Impact Magnitude[h] and Species-Specific Mitigation[i]
				Within SEZ (Direct Effects)[e]	Access Road (Direct Effects)[f]	Outside SEZ (Indirect Effects)[g]	
Mammals (Cont.)							
Pahranagat Valley montane vole	*Microtus montanus fucosus*	BLM-S; NV-P; FWS-SC; NV-S2	Endemic to Lincoln County, Nevada, where it is restricted to springs in the Pahranagat Valley. Within that area, isolated populations utilize mesic montane and desert riparian patches. Nearest recorded occurrence is from Pahranagat Creek, approximately 27 mi southwest of the SEZ. About 23,900 acres of potentially suitable habitat occurs within the SEZ region.	410 acres of potentially suitable habitat lost (1.7% of available potentially suitable habitat)	0 acres	6,850 acres of potentially suitable habitat (28.6% of available potentially suitable habitat)	Moderate overall impact. Avoiding or minimizing disturbance to playas within the SEZ could reduce impacts. In addition, pre-disturbance surveys and avoidance or minimization of disturbance to occupied habitats in the areas of direct effects or compensatory mitigation of direct effects on occupied habitats could reduce impacts.

TABLE 11.4.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]			Overall Impact Magnitude[h] and Species-Specific Mitigation[i]
				Within SEZ (Direct Effects)[e]	Access Road (Direct Effects)[f]	Outside SEZ (Indirect Effects)[g]	
Mammals (Cont.)							
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 4,050,000 acres of potentially suitable habitat occurs within the SEZ region.	24,200 acres of potentially suitable habitat lost (0.6% of available potentially suitable habitat)	53 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	115,000 acres of potentially suitable habitat (2.8% 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 effect.
Spotted bat	*Euderma maculatum*	BLM-S; NV-P; FWS-SC; NV-S2	Year-round resident in forests and shrubland habitats. Uses caves and rock crevices for day roosting and winter hibernation. Nearest recorded occurrence is from the vicinity of Panaca, Nevada, approximately 13 mi east of the SEZ. About 3,952,400 acres of potentially suitable habitat occurs within the SEZ region.	23,000 acres of potentially suitable habitat lost (0.6% of available potentially suitable habitat)	15 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	103,350 acres of potentially suitable habitat (2.6% 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 effect.

TABLE 11.4.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status[b]	Habitat[c]	Maximum Area of Potential Habitat Affected[d]			Overall Impact Magnitude[h] and Species-Specific Mitigation[i]
				Within SEZ (Direct Effects)[e]	Access Road (Direct Effects)[f]	Outside SEZ (Indirect Effects)[g]	
Mammals (Cont.)							
Western pipistrelle	*Pipistrellus Hesperus*	BLM-S	A common year-round resident of deserts, grasslands, and woodlands in southern Nevada. Occurs in various habitats, including mountain foothill woodlands, desert shrublands, desert washes, and pinyon-juniper woodlands. Roosts primarily in rock crevices; occasionally in mines and caves. About 3,700,000 acres of potentially suitable habitat occurs within the SEZ region.	25,050 acres of potentially suitable habitat lost (0.3% of available potentially suitable habitat)	60 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	150,000 acres of potentially suitable habitat (4.1% 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 effect.
Western small-footed myotis	*Myotis ciliolabrum*	BLM-S; FWS-SC	Year-round resident in a variety of woodlands and riparian habitats at elevations below 9,000 ft. Roosts in caves, buildings, mines, and crevices of cliff faces. Known to occur in Lincoln County, Nevada. About 5,016,400 acres of potentially suitable habitat occurs within the SEZ region.	25,000 acres of potentially suitable habitat lost (0.5% of available potentially suitable habitat)	40 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	140,000 acres of potentially suitable habitat (2.8% 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 effect.

Footnotes on next page.

TABLE 11.4.12.1-1 (Cont.)

[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 11.4.12.1-1 of the Draft Solar PEIS.

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

[c] Potentially suitable habitat was determined 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] For access road development, direct effects were estimated within a 5-mi (8-km) long, 60-ft (18-m) wide road ROW from the SEZ to the nearest state highway. Direct impacts within this area were determined from the proportion of potentially suitable habitat within the 1-mi (1.6-km) wide road corridor.

[g] 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.

[h] 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.

[i] 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.

[j] Species in bold text have been recorded or have designated critical habitat in the affected area.

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

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

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

sagebrush (*Artemisia* spp.). Nearest known occurrences are from Patterson Wash, approximately 12 mi (19 km) east of the SEZ. Potentially suitable habitat for this species occurs on the Dry Lake Valley North SEZ, assumed access road corridor, and other portions of the affected area (Table 11.4.12.1-1).

Tiehm Blazingstar. The Tiehm blazingstar is a perennial forb endemic to Nevada. This species was analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. It occurs on hilltops, sparsely vegetated white calcareous knolls, and bluffs with other scattered perennial plant species. Nearest recorded occurrences are from the White River, approximately 7 mi (11 km) west of the SEZ. Potentially suitable habitat for this species occurs on the Dry Lake Valley North SEZ, assumed access road corridor, and other portions of the affected area (Table 11.4.12.1-1).

Golden Eagle. The golden eagle is an uncommon to common permanent resident in southern Nevada. This species was not analyzed for the Dry Lake Valley North 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 on the revised area of the SEZ and throughout the area of indirect effects (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable nesting habitat (rocky cliffs and outcrops) does not occur on the SEZ or access road corridor; however, approximately 300 acres (1.2 km^2) of this habitat that may be potentially suitable nesting habitat occurs in the area of indirect effects.

Gray Vireo. The gray vireo is an uncommon summer resident in southern Nevada. This species was not analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. The species occurs in arid environments such as pinyon-juniper, chaparral, and desert shrublands. It builds open-cup nests of plant material in forked branches of shrubs or small trees. On the basis of an evaluation of the SWReGAP habitat suitability model for this species, potentially suitable habitat does not occur on the revised area of the SEZ or within the assumed access road corridor; however, potentially suitable breeding and nonbreeding habitat may occur outside the SEZ in the area of indirect effects (Table 11.4.12.1-1).

Loggerhead Shrike. The loggerhead shrike is a common winter resident in lowlands and foothills of southern Nevada. This species was not analyzed for the Dry Lake Valley North 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 winter foraging habitat may occur on the revised area of the SEZ, the assumed access road corridor, and the area of indirect effects (Table 11.4.12.1-1).

Long-Eared Owl. The long-eared owl is an uncommon year-round resident in southern Nevada. This species was not analyzed for the Dry Lake Valley North 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 revised area of the SEZ, assumed access road corridor, and the area of indirect effects (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable nesting habitat (forests) does not occur on the revised area of the SEZ or assumed access road corridor (Table 11.4.12.1-1).

Prairie Falcon. The prairie falcon occurs throughout the western United States. This species was analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. According to the SWReGAP habitat suitability model for the prairie falcon, it is a year-round resident throughout the Dry Lake Valley North SEZ region. The species occurs in open habitats in mountainous areas, sagebrush-steppe, grasslands, or cultivated areas. Nests are typically constructed in well-sheltered ledges of rocky cliffs and outcrops. This species occurs in Lincoln County, Nevada, and potentially suitable foraging habitat occurs on the SEZ and in other portions of the affected area (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable nesting habitat (rocky cliffs and outcrops) does not occur on the revised area of the SEZ or access road corridor; however, approximately 300 acres (1.2 km^2) of this habitat that may be potentially suitable nesting habitat occurs in the area of indirect effects.

Western Burrowing Owl. According to the SWReGAP habitat suitability model for the western burrowing owl, the species is a summer (breeding) resident of open, dry grasslands and desert habitats in the Dry Lake Valley North SEZ region. This species was analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. The species occurs locally in open areas with sparse vegetation, where it forages in grasslands, shrublands, and open disturbed areas and nests in burrows typically constructed by mammals. The species occurs in Lincoln County, Nevada, and potentially suitable summer breeding habitat is expected to occur in the SEZ and in other portions of the affected area (Table 11.4.12.1-1). Information provided by the Nevada BLM Ely District Office indicates that active nests are known to occur in burrows in the northern portion of the original SEZ configuration. Nest sites (burrows) are likely to occur on the revised area of the SEZ or within the area of indirect effects.

Western Snowy Plover. According to the SWReGAP habitat suitability model, the western snowy plover is a summer (breeding) resident throughout the Dry Lake Valley North SEZ region. This species was analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. This species breeds on alkali flats around reservoirs and sandy shorelines. The species is known to occur at Adams-McGill Reservoir, approximately 23 mi (37 km) northwest of the SEZ (Table 11.4.12.1-1). Suitable breeding habitat is expected to occur on the revised area of the SEZ and in portions of the affected area, particularly associated with the playa habitat along the southwestern border of the SEZ and in the area of indirect effects.

Big Brown Bat. The big brown bat is a fairly common year-round resident in southern Nevada. This species was not analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. The big brown bat is uncommon in desert habitats but may occur in desert shrublands that are 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 in the revised area of the SEZ and throughout the area of indirect effects (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (forests and rock outcrops) does not occur in the revised area of the SEZ or access road corridor; however, approximately 300 acres (1.2 km^2) of cliffs and rock outcrops that may be potentially suitable nesting 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 Dry Lake Valley North SEZ in the Draft Solar PEIS. The species inhabits desert, chaparral, woodlands, and forests. It roosts primarily in crevices but also uses buildings, mines, and hollow trees. Potentially suitable foraging habitat for this species may occur in the revised area of the SEZ and throughout the area of indirect effects (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (forests and rock outcrops) does not occur in the revised area of the SEZ or access road corridor; however, approximately 300 acres (1.2 km^2) of cliffs and rock outcrops that may be potentially suitable nesting habitat occurs 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 Dry Lake Valley North 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 in the revised area of the SEZ and throughout the area of indirect effects (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (forests) does not occur in the revised area of the SEZ, the assumed access road corridor, or area of indirect effects (Table 11.4.12.1-1).

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 Dry Lake Valley North 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 (1,219-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 in the revised area of the SEZ and throughout the area of indirect effects (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (forests and rock outcrops) does not occur in the revised area of the SEZ or access road corridor; however, approximately 300 acres (1.2 km^2) of cliffs and rock outcrops that may be potentially suitable nesting habitat occurs in the area of indirect effects.

Western Pipistrelle. The western pipistrelle is a common year-round resident in southern Nevada. This species was not analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. The species inhabits mountain foothill woodlands, desert shrublands, desert washes, and pinyon-juniper woodlands. It roosts primarily in rock crevices and occasionally in mines and caves. Potentially suitable foraging habitat for this species may occur in the revised area of the SEZ and throughout the area of indirect effects (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (rock outcrops) does not occur in the revised area of SEZ or access road corridor; however, approximately 300 acres (1.2 km^2) of cliffs and rock outcrops that may be potentially suitable nesting habitat occurs in the area of indirect effects.

11.4.12.2 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 Dry Lake Valley North SEZ could affect potentially suitable habitats of special status species. The analysis presented in the Draft Solar PEIS for the original Dry Lake Valley North SEZ developable area indicated that development would result in no impact or a small overall impact on most special status species (Table 11.4.12.1-1 in the Draft Solar PEIS). However, development was determined to result in moderate or large impacts on some special status species. Development within the revised area of the SEZ could still affect the same 22 species evaluated in the Draft Solar PEIS. However, the reduction in the SEZ boundaries and the developable area of the Dry Lake Valley North SEZ would result in reduced impact levels compared to original estimates in the Draft Solar PEIS. Those 13 species that were determined to have moderate or large impacts in the Draft Solar PEIS are discussed below. Impacts on species that were determined to have small overall impacts in the Draft Solar PEIS are not discussed, because impacts on these species using revised SEZ footprints are expected to remain small.

In addition, impacts on the 11 BLM-designated sensitive species that were not evaluated for the Dry Lake Valley North SEZ in the Draft Solar PEIS are discussed below and in Table 11.4.12.1-1. 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 11.4.12.2 of the Draft Solar PEIS).

Blaine Fishhook Cactus. The Blaine fishhook cactus is known to occur in the Dry Lake Valley. Approximately 132 acres (0.5 km^2) of potentially suitable habitat in the revised area of the Dry Lake Valley North SEZ could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents about 0.7% of potentially suitable habitat in the SEZ region. About 3,500 acres (14 km^2) of potentially suitable habitat occurs in the area

of indirect effects; this area represents about 17.4% of the potentially suitable habitat in the SEZ region (Table 11.4.12.1-1).

The overall impact on the Blaine fishhook cactus from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North 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 SEZ region.

Avoiding or minimizing disturbance to all playa habitat in the revised area of the SEZ may be sufficient to reduce impacts on the Blaine fishhook cactus to small or negligible levels. For this species and other special status plants, impacts could be reduced by conducting pre-disturbance surveys and avoiding or minimizing disturbance to occupied habitats in the revised area of the SEZ. If avoidance or minimization is not a feasible option, plants could be translocated from areas of direct effects to protected areas that would not be affected directly or indirectly by future development. Alternatively or in combination with translocation, a compensatory plan could be developed and implemented to mitigate direct effects on occupied habitats. The plan could involve the protection and enhancement of existing occupied or suitable habitats to compensate for habitats lost to development. A comprehensive mitigation strategy that uses one or more of these options could be designed to completely offset the impacts of development.

Eastwood Milkweed. The Eastwood milkweed is known to occur in the Dry Lake Valley. Approximately 1,865 acres (7.5 km^2) of potentially suitable habitat in the revised area of the Dry Lake Valley North SEZ and 5 acres (<0.1 km^2) of potentially suitable habitat in the road corridor could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents about 0.5% of potentially suitable habitat in the SEZ region. About 27,800 acres (112 km^2) of potentially suitable habitat occurs in the area of indirect effects; this area represents about 6.7% of the potentially suitable habitat in the SEZ region (Table 11.4.12.1-1).

The overall impact on the Eastwood milkweed from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North 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 SEZ region.

Avoidance of all potentially suitable habitats is not a feasible way to mitigate impacts on the Eastwood milkweed, because potentially suitable sagebrush and mixed shrubland habitat is widespread throughout the area of direct effects. Impacts could be reduced by conducting pre-disturbance surveys and avoiding or minimizing disturbance to occupied habitats on the SEZ. If avoidance or minimization is not a feasible option, plants could be translocated from areas of direct effects to protected areas that would not be affected directly or indirectly by future development. Alternatively or in combination with translocation, a compensatory plan could be developed and implemented to mitigate direct effects on occupied habitats. The plan could

involve the protection and enhancement of existing occupied or suitable habitats to compensate for habitats lost to development. A comprehensive mitigation strategy that uses one or more of these options could be designed to completely offset the impacts of development.

Long-Calyx Milkvetch. The long-calyx milkvetch is not known to occur in the affected area of the revised area of the Dry Lake Valley North SEZ; however, approximately 18,000 acres (73 km^2) of potentially suitable habitat in the revised area of the SEZ and 40 acres (0.2 km^2) of potentially suitable habitat in the road corridor could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents about 0.4% of potentially suitable habitat in the SEZ region. About 124,000 acres (502 km^2) of potentially suitable habitat occurs in the area of indirect effects; this area represents about 2.9% of the potentially suitable habitat in the SEZ region (Table 11.4.12.1-1).

The overall impact on the long-calyx milkvetch from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North 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 SEZ region.

Avoidance of all potentially suitable habitats to mitigate impacts on the long-calyx milkvetch is not feasible, because potentially suitable shrubland habitat is widespread throughout the area of direct effects. However, impacts could be reduced with the implementation of programmatic design features and the mitigation options described previously for the Eastwood milkweed. The need for mitigation, other than programmatic design features, should be determined by conducting pre-disturbance surveys for the species and its habitat on the SEZ.

Needle Mountains Milkvetch. The Needle Mountains milkvetch is not known to occur in the affected area of the revised area of the Dry Lake Valley North SEZ; however, approximately 500 acres (2 km^2) of potentially suitable habitat in the revised area of the SEZ could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents about 1.2% of potentially suitable habitat in the SEZ region. About 7,250 acres (29 km^2) of potentially suitable habitat occurs in the area of indirect effects; this area represents about 17.2% of the potentially suitable habitat in the SEZ region (Table 11.4.12.1-1).

The overall impact on the Needle Mountains milkvetch from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North 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 SEZ region.

Avoiding or minimizing disturbance to playa and arid grassland habitats on the revised area of the SEZ may be sufficient to reduce impacts on the Needle Mountains milkvetch to small or negligible levels. In addition, impacts could be reduced with the implementation of programmatic design features and the mitigation options described previously for the Eastwood

milkweed. The need for mitigation, other than programmatic design features, should be determined by conducting pre-disturbance surveys for the species and its habitat on the SEZ.

Pioche Blazingstar. The Pioche blazingstar is not known to occur in the affected area of the revised area of the Dry Lake Valley North SEZ; however, approximately 20,000 acres (81 km^2) of potentially suitable habitat on the SEZ and 46 acres (0.2 km^2) of potentially suitable habitat in the road corridor could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents about 0.7% of potentially suitable habitat in the SEZ region. About 146,250 acres (592 km^2) of potentially suitable habitat occurs in the area of indirect effects; this area represents about 5.1% of the potentially suitable habitat in the SEZ region (Table 11.4.12.1-1).

The overall impact on the Pioche blazingstar from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North 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 revised area of the SEZ region.

Avoidance of all potentially suitable habitats to mitigate impacts on the Pioche blazingstar is not feasible, because potentially suitable shrubland habitat is widespread throughout the area of direct effects. However, impacts could be reduced with the implementation of programmatic design features and the mitigation options described previously for the Eastwood milkweed. The need for mitigation, other than programmatic design features, should be determined by conducting pre-disturbance surveys for the species and its habitat on the SEZ.

Tiehm Blazingstar. The Tiehm blazingstar is not known to occur in the affected area of the revised area of the Dry Lake Valley North SEZ; however, approximately 20,000 acres (81 km^2) of potentially suitable habitat in the SEZ and 40 acres (0.2 km^2) of potentially suitable habitat in the road corridor could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents about 0.9% of potentially suitable habitat in the SEZ region. About 120,000 acres (486 km^2) of potentially suitable habitat occurs in the area of indirect effects; this area represents about 5.2% of the potentially suitable habitat in the SEZ region (Table 11.4.12.1-1).

The overall impact on the Tiehm blazingstar from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North 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 SEZ region.

Avoidance of all potentially suitable habitats to mitigate impacts on the Tiehm blazingstar is not feasible, because potentially suitable shrubland habitat is widespread throughout the area of direct effects. However, impacts could be reduced with the

implementation of programmatic design features and the mitigation options described previously for the Eastwood milkweed. The need for mitigation, other than programmatic design features, should be determined by conducting pre-disturbance surveys for the species and its habitat on the SEZ.

Golden Eagle. The golden eagle was not analyzed for the Dry Lake Valley North 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 revised area of the Dry Lake Valley North SEZ. Approximately 24,890 acres (100 km^2) of potentially suitable foraging habitat in the revised area of the SEZ and 60 acres (0.2 km^2) of potentially suitable foraging habitat in the access road corridor could be directly affected by construction and operations (Table 11.4.12.1-1). This direct impact area represents 0.5% of potentially suitable habitat in the SEZ region. About 143,800 acres (582 km^2) of potentially suitable habitat occurs in the area of indirect effects; this area represents about 2.9% of the available suitable habitat in the SEZ region (Table 11.4.12.1-1). Most of this area could serve as foraging habitat (open shrublands). On the basis of an evaluation of SWReGAP land cover types, potentially suitable nesting habitat (rocky cliffs and outcrops) does not occur on the SEZ or access road corridor; however, approximately 300 acres (1.2 km^2) of this 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 revised area of the Dry Lake Valley North 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.

Gray Vireo. The gray vireo was not analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. This species is an uncommon summer resident in southern Nevada. The gray vireo is not known to occur in the revised area of the Dry Lake Valley North SEZ, and suitable habitat is not expected to occur within the SEZ or access road corridor; however, on the basis of an evaluation of the SWReGAP habitat suitability model for this species, approximately 3,150 acres (13 km^2) of potentially suitable breeding and nonbreeding habitat may occur outside the SEZ in the area of indirect effects. This area represents about 0.2% of the potentially suitable foraging habitat in the SEZ region (Table 11.4.12.1-1).

The overall impact on the gray vireo from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North SEZ is considered small, because no potentially suitable habitat for this species occurs in the area of direct effects and only indirect effects are possible. The implementation of programmatic design features may be sufficient to reduce indirect impacts on this species to negligible levels.

Loggerhead Shrike. The loggerhead shrike was not analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. This species is a common winter resident in lowlands and foothills of southern Nevada. Approximately 24,900 acres (100 km^2) of potentially suitable foraging habitat in the revised area of the SEZ and 60 acres (0.2 km^2) of potentially suitable foraging habitat in the access road corridor could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents 0.5% of potentially suitable habitat in the SEZ region. About 140,000 acres (567 km^2) of potentially suitable winter foraging habitat occurs in the area of indirect effects; this area represents about 2.8% of the available suitable habitat in the SEZ region (Table 11.4.12.1-1).

The overall impact on the loggerhead shrike from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North 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 readily available in other portions of the affected area.

Long-Eared Owl. The long-eared owl was not analyzed for the Dry Lake Valley North 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 revised area of the Dry Lake Valley North SEZ. Approximately 24,890 acres (101 km^2) of potentially suitable foraging habitat in the revised area of the SEZ and 60 acres (0.2 km^2) of potentially suitable foraging habitat in the access road corridor could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents 0.5% of potentially suitable habitat in the SEZ region. About 149,450 acres (605 km^2) of potentially suitable foraging habitat occurs in the area of indirect effects; this area represents about 3.1% of the available suitable foraging habitat in the SEZ region (Table 11.4.12.1-1).

The overall impact on the long-eared owl from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North 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 readily available in other portions of the affected area.

Prairie Falcon. The prairie falcon is a year-round resident in the Dry Lake Valley North SEZ region, and potentially suitable foraging habitat is expected to occur in the affected area of the revised area of the SEZ. Approximately 24,000 acres (97 km^2) of potentially suitable habitat

within the SEZ and 30 acres (0.1 km^2) of potentially suitable habitat in the road corridor could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents 1.4% of potentially suitable habitat in the SEZ region. About 140,000 acres (567 km^2) of potentially suitable habitat occurs in the area of indirect effects; this area represents about 8.2% of the potentially suitable habitat in the SEZ region (Table 11.4.12.1-1). Most of this area could serve as foraging habitat (open shrublands). On the basis of an evaluation of SWReGAP land cover types, potentially suitable nesting habitat (rocky cliffs and outcrops) does not occur on the SEZ or access road corridor; however, approximately 300 acres (1.2 km^2) of this habitat that may be potentially suitable nesting habitat occurs in the area of indirect effects.

The overall impact on the prairie falcon from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North SEZ is considered moderate, because the amount of potentially suitable foraging habitat for this species in the area of direct effects represents greater than or equal to 1% but less than 10% of potentially suitable foraging habitat in the region. The implementation of programmatic design features is expected to be sufficient to reduce indirect impacts on this species. Avoidance of all potentially suitable foraging habitats to mitigate impacts on the prairie falcon is not feasible, because potentially suitable shrubland habitat is widespread throughout the area of direct effects and in other portions of the SEZ region.

Western Burrowing Owl. The western burrowing owl is considered a summer breeding resident within the revised area of the Dry Lake Valley North SEZ region, and potentially suitable foraging habitat is expected to occur in the affected area. Approximately 24,600 acres (100 km^2) of potentially suitable habitat in the revised area of the SEZ and 50 acres (0.2 km^2) of potentially suitable habitat in the road corridor could be directly affected by construction and operations (Table 1.4.12.1-1). This direct effects area represents 0.8% of potentially suitable habitat in the SEZ region. About 145,000 acres (587 km^2) of potentially suitable habitat occurs in the area of indirect effects; this area represents about 4.6% of the potentially suitable habitat in the SEZ region (Table 11.4.12.1-1). Most of this area could serve as foraging and nesting habitat (shrublands). Information provided by the Nevada BLM Ely District Office indicates that active nests are known to occur in burrows in the northern portion of the original SEZ configuration. Nest sites (burrows) are likely to occur in the revised area of the SEZ or within the area of indirect effects.

The overall impact on the western burrowing owl from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North SEZ is considered small, because the amount of potentially suitable foraging and nesting habitat for this species in the area of direct effects represents less than 1% of potentially suitable foraging and nesting habitat in the region. The implementation of programmatic design features is expected to be sufficient to reduce indirect impacts on this species.

Avoidance of all potentially suitable habitats is not a feasible way to mitigate impacts on the western burrowing owl, because potentially suitable shrubland habitats are widespread throughout the area of direct effects and readily available in other portions of the SEZ region. Impacts on the western burrowing owl could be reduced by implementing programmatic

design features, conducting pre-disturbance surveys, and avoiding or minimizing disturbance to occupied burrows on the SEZ. If avoidance or minimization is not a feasible option, a compensatory plan could be developed and implemented to mitigate direct effects. The plan could involve the protection and enhancement of existing occupied or suitable habitats to compensate for habitats lost to development. A comprehensive mitigation strategy that uses one or both of these options could be designed to completely offset the impacts of development. The need for mitigation, other than programmatic design features, should be determined by conducting pre-disturbance surveys for the species and its habitat on the SEZ.

Western Snowy Plover. The western snowy plover is considered a summer breeding resident within the Dry Lake Valley North SEZ region, and potentially suitable foraging habitat is expected to occur in the affected area. Approximately 250 acres (1 km^2) of potentially suitable habitat in the revised area of the SEZ could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents 0.4% of potentially suitable habitat in the SEZ region. About 5,000 acres (20 km^2) of potentially suitable habitat occurs in the area of indirect effects; this area represents about 7.5% of the potentially suitable habitat in the SEZ region (Table 11.4.12.1-1). Most of this area could serve as foraging and nesting habitat in and along playa margins. On the basis of an evaluation of SWReGAP land cover types, approximately 165 acres (1 km^2) of playa habitat exists on the SEZ that may be potentially suitable nesting or foraging habitat for this species.

The overall impact on the western snowy plover from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North SEZ is considered small, because the amount of potentially suitable foraging and nesting habitat for this species in the area of direct effects represents less than 1% of potentially suitable foraging and nesting habitat in the region.

Impacts on the western snowy plover could be reduced by implementing programmatic design features, conducting pre-disturbance surveys, and avoiding or minimizing disturbance to all playa habitats and other occupied habitats in the revised area of the SEZ. If avoidance or minimization of playas and all occupied habitats is not a feasible option, a compensatory plan could be developed and implemented to mitigate direct effects. The plan could involve the protection and enhancement of existing occupied or suitable habitats to compensate for habitats lost to development. A comprehensive mitigation strategy that uses one or both of these options could be designed to completely offset the impacts of development. The need for mitigation, other than programmatic design features, should be determined by conducting pre-disturbance surveys for the species and its habitat on the SEZ.

Big Brown Bat. The big brown bat is a fairly common year-round resident in southern Nevada. This species was not analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. Suitable roosting habitats (caves, forests, and buildings) are not expected to occur in the revised area of the SEZ, but the availability of suitable roosting sites in the area of indirect effects has not been determined. Approximately 24,840 acres (101 km^2) and 50 acres (0.2 km^2) of potentially suitable foraging habitat within the revised area of the SEZ and access road

corridor, respectively, could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents about 0.9% of potentially suitable foraging habitat in the region. About 89,200 acres (361 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 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (rocky cliffs and outcrops) does not occur on the SEZ or access road corridor; however, approximately 300 acres (1.2 km^2) of this 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 revised area of the Dry Lake Valley North 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 on the big brown bat, 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 Dry Lake Valley North 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 25,050 acres (101 km^2) and 53 acres (0.2 km^2) of potentially suitable foraging habitat in the revised area of the SEZ and access road corridor, respectively, could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents about 0.6% of potentially suitable foraging habitat in the region. About 120,000 acres (485 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 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (rocky cliffs and outcrops) does not occur in the revised area of the SEZ or access road corridor; however, approximately 300 acres (1.2 km^2) of this habitat that may be potentially suitable roosting habitat occurs 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 Dry Lake Valley North 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 on the Brazilian free-tailed bat, 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 Dry Lake Valley North SEZ in the Draft Solar PEIS. Suitable roosting habitats (forests and rock outcrops) are not expected to occur in the revised area of the SEZ, but the availability of suitable roosting sites in the area of indirect effects has not been determined. Approximately 25,050 acres (101 km^2) and 53 acres (0.2 km^2) of potentially suitable foraging habitat on the revised area of the SEZ and access road corridor, respectively, could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents about 1.0% of potentially suitable foraging habitat in the region. About 117,000 acres (473 km^2) of potentially suitable foraging habitat occurs in the area of indirect effects; this area represents about 4.6% of the available suitable foraging habitat in the region (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (rocky cliffs and outcrops) does not occur on the SEZ or access road corridor; however, approximately 300 acres (1.2 km^2) of this habitat that may be potentially suitable roosting habitat occurs 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 revised area of the Dry Lake Valley North SEZ is considered moderate, because the amount of potentially suitable foraging habitat for this species in the area of direct effects represents greater than or equal to 1% but less than 10% of potentially suitable habitat in the SEZ region. The implementation of programmatic design features may be sufficient to reduce indirect impacts on this species. However, avoidance of all potentially suitable foraging habitats to mitigate impacts on the California myotis is not feasible, because potentially suitable shrubland habitat is widespread throughout the area of direct effect.

Desert Valley Kangaroo Mouse. The Desert Valley kangaroo mouse is endemic to Nevada and is known to occur in the revised area of the Dry Lake Valley North SEZ. This species was analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. Approximately 24,000 acres (97 km^2) and 17 acres (0.1 km^2) of potentially suitable habitat in the revised area of the SEZ and, access road corridor, respectively, could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents 1.9% of potentially suitable habitat in the SEZ region. About 60,000 acres (243 km^2) of potentially suitable habitat occurs in the area of indirect effects; this area represents about 4.8% of the potentially suitable habitat in the SEZ region (Table 11.4.12.1-1).

The overall impact on the Desert Valley kangaroo mouse from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North SEZ is considered moderate, because the amount of potentially suitable habitat for this species in the area of direct effects represents greater than or equal to 1% but less than 10% of potentially suitable habitat in the SEZ region. The implementation of programmatic design features may be sufficient to reduce indirect impacts on this species to negligible levels.

Despite the apparent widespread availability of potentially suitable habitat in the affected area, the complete avoidance of all playa habitats in the revised area of the SEZ could reduce impacts on this species. Consistent with the mitigation recommendations provided by the

USFWS (Stout 2009), pre-disturbance surveys and avoiding or minimizing disturbance to occupied habitats in the area of direct effects could reduce impacts. If avoidance or minimization is not a feasible option, a compensatory plan could be developed and implemented to mitigate direct effects on occupied habitats. The plan could involve the protection and enhancement of existing occupied or suitable habitats to compensate for habitats lost to development. A comprehensive mitigation strategy that uses one or both of these options could be designed to completely offset the impacts of development.

Fringed Myotis. The fringed myotis is a year-round resident within the Dry Lake Valley North SEZ region. Suitable roosting habitats (caves 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. This species was analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. Approximately 410 acres (2 km^2) and 10 acres (<1 km^2) of potentially suitable habitat in the revised area of the SEZ and access road corridor, respectively, could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents about 0.1% of potentially suitable foraging habitat in the region. About 80,000 acres (324 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 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (rocky cliffs and outcrops) does not occur on the SEZ or access road corridor; however, approximately 300 acres (1.2 km^2) of this potentially suitable roosting habitat occurs in the area of indirect effects.

The overall impact on the fringed myotis from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North SEZ is considered small, because the amount of potentially suitable foraging and nesting habitat for this species in the area of direct effects represents less than 1% of potentially suitable habitat in the SEZ region. The implementation of programmatic design features may be sufficient to reduce indirect impacts on this species. However, avoidance of all potentially suitable foraging habitats to mitigate impacts on the fringed myotis is not feasible, because potentially suitable shrubland habitat is widespread throughout the area of direct effects.

Hoary Bat. The hoary bat is a fairly common year-round resident in southern Nevada. This species was not analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. Suitable roosting habitats (forests) are not expected to occur in the revised area of the SEZ, but the availability of suitable roosting sites in the area of indirect effects has not been determined. Approximately 24,000 acres (97 km^2) and 45 acres (0.2 km^2) of potentially suitable habitat in the revised area of the SEZ and access road corridor, respectively, could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents about 1.1% of potentially suitable foraging habitat in the region. About 65,000 acres (263 km^2) of potentially suitable foraging habitat occurs in the area of indirect effects; this area represents about 3.1% of the available suitable foraging habitat in the region (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, no suitable roosting habitat (forests) exists within the revised area of the SEZ, access road corridor, or 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 revised area of the Dry Lake Valley North SEZ is considered moderate, because the amount of potentially suitable foraging habitat for this species in the area of direct effects represents greater than or equal to 1% but less than 10% of potentially suitable habitat in the SEZ region. The implementation of programmatic design features may be sufficient to reduce indirect impacts on this species. However, avoidance of all potentially suitable foraging habitats to mitigate impacts on the hoary bat is not feasible, because potentially suitable shrubland habitat is widespread throughout the area of direct effect.

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 Dry Lake Valley North SEZ in the Draft Solar PEIS. Suitable roosting habitats (forests and rock outcrops) are not expected to occur in the revised area of the SEZ, but the availability of suitable roosting sites in the area of indirect effects has not been determined. Approximately 24,850 acres (100 km^2) and 51 acres (0.2 km^2) of potentially suitable habitat in the revised area of the SEZ and access road corridor, respectively, could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents about 0.9% of potentially suitable foraging habitat in the region. About 90,000 acres (364 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 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (rocky cliffs and outcrops) does not occur on the SEZ or access road corridor; however, approximately 300 acres (1.2 km^2) of this potentially suitable roosting habitat occurs 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 revised area of the Dry Lake Valley North 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 on the long-legged myotis, because potentially suitable foraging habitat is widespread throughout the area of direct effects and is readily available in other portions of the SEZ region.

Pahranagat Valley Montane Vole. The Pahranagat Valley montane vole is endemic to Lincoln County, Nevada, near the Pahranagat Creek. This species was analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. The species is not known to occur in the affected area of the revised area of the Dry Lake Valley North SEZ; however, approximately 410 acres (2 km^2) of potentially suitable habitat on the SEZ could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents 1.7% of potentially suitable habitat in the SEZ region. About 6,850 acres (28 km^2) of potentially suitable habitat occurs in the area of indirect effects; this area represents about 28.6% of the potentially suitable habitat in the SEZ region (Table 11.4.12.1-1).

The overall impact on the Pahranagat Valley montane vole from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North SEZ is considered moderate, because the amount of potentially suitable foraging and nesting habitat for this species in the area of direct effects represents greater than or equal to 1% but less than 10% of potentially suitable 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.

Avoiding or minimizing disturbance to all mesic habitats in the revised area of the SEZ (e.g., playas) could reduce impacts on this species. In addition, pre-disturbance surveys and avoidance or minimization of disturbance to occupied habitats in the area of direct effects could reduce impacts. If avoidance or minimization is not a feasible option, a compensatory plan could be developed and implemented to mitigate direct effects on occupied habitats. The plan could involve the protection and enhancement of existing occupied or suitable habitats to compensate for habitats lost to development. A comprehensive mitigation strategy that uses one or both of these options could be designed to completely offset the impacts of development.

Silver-Haired Bat. The silver-haired bat is an uncommon year-round resident in southern Nevada. This species was not analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. Suitable roosting habitats (forests) are not expected to occur on the SEZ or access road corridor, but the availability of suitable roosting sites in the area of indirect effects has not been determined. Approximately 24,200 acres (28 km^2) and 53 acres (0.2 km^2) of potentially suitable foraging habitat on the revised SEZ and access road corridor, respectively, could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents about 0.6% of potentially suitable foraging habitat in the region. About 115,000 acres (465 km^2) of potentially suitable foraging habitat occurs in the area of indirect effects; this area represents about 2.8% of the available suitable foraging habitat in the region (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, no suitable roosting habitat (forests) exists within the SEZ, access road corridor, or 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 Dry Lake Valley North 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 on the silver-haired bat, because potentially suitable foraging habitat is widespread throughout the area of direct effects and is readily available in other portions of the SEZ region.

Spotted Bat. The spotted bat is a year-round resident within the Dry Lake Valley North SEZ region. This species was not analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. Suitable roosting habitats (caves and rock outcrops) are not expected to occur on the SEZ or access road corridor, but the availability of suitable roosting sites in the area of indirect effects

has not been determined. Approximately 23,000 acres (93 km^2) of potentially suitable foraging habitat on the SEZ and 15 acres (0.1 km^2) of potentially suitable habitat in the access road corridor could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents about 0.6% of potentially suitable foraging habitat in the region. About 103,350 acres (418 km^2) of potentially suitable foraging habitat occurs in the area of indirect effects; this area represents about 2.6% of the potentially suitable foraging habitat in the region (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (rocky cliffs and outcrops) does not occur on the SEZ or access road corridor; however, approximately 300 acres (1.2 km^2) of this potentially suitable roosting habitat occurs in the area of indirect effects.

The overall impact on the spotted bat from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North 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 habitat in the region. The implementation of programmatic design features may be sufficient to reduce indirect impacts on this species. Avoidance of all potentially suitable foraging habitats to mitigate impacts on the spotted bat is not feasible, because potentially suitable shrubland habitat is widespread throughout the area of direct effects and in other portions of the SEZ region.

Western Pipistrelle. The western pipistrelle is a common year-round resident in southern Nevada. This species was not analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. Suitable roosting habitats (forests and rock outcrops) are not expected to occur in the revised area of the SEZ, but the availability of suitable roosting sites in the area of indirect effects has not been determined. Approximately 25,050 acres (101 km^2) and 60 acres (0.2 km^2) of potentially suitable foraging habitat on the revised SEZ and access road corridor, respectively, could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents about 0.3% of potentially suitable foraging habitat in the region. About 150,000 acres (607 km^2) of potentially suitable foraging habitat occurs in the area of indirect effects; this area represents about 4.1% of the available suitable foraging habitat in the region (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (rocky cliffs and outcrops) does not occur on the SEZ or access road corridor; however, approximately 300 acres (1.2 km^2) of this potentially suitable roosting habitat occurs in the area of indirect effects.

The overall impact on the western pipistrelle from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North 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 on the western pipistrelle, because potentially suitable foraging habitat is widespread throughout the area of direct effects and is readily available in other portions of the SEZ region.

Western Small-Footed Bat. The western small-footed bat is a year-round resident within the Dry Lake Valley North SEZ region. Suitable roosting habitats (caves, rock outcrops, and buildings) are not expected to occur in the revised area of the SEZ, but the availability of suitable roosting sites in the area of indirect effects has not been determined. Approximately 25,000 acres (101 km^2) and 40 acres (0.2 km^2) of potentially suitable foraging habitat on the revised SEZ and access road corridor, respectively, could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents about 0.5% of potentially suitable foraging habitat in the region. About 140,000 acres (567 km^2) of potentially suitable foraging habitat occurs in the area of indirect effects; this area represents about 2.8% of the potentially suitable foraging habitat in the region (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (rocky cliffs and outcrops) does not occur on the SEZ or access road corridor; however, approximately 300 acres (1.2 km^2) of this potentially suitable roosting habitat occurs in the area of indirect effects.

The overall impact on the western small-footed bat from construction, operation, and decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North 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 habitat in the region. The implementation of programmatic design features may be sufficient to reduce indirect impacts on this species. However, avoidance of all potentially suitable foraging habitats to mitigate impacts on the western small-footed bat is not feasible, because potentially suitable shrubland habitat is widespread throughout the area of direct effects and in other portions of the SEZ region.

11.4.12.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce impacts on special status and rare species are described in Section A.2.2 of Appendix A of this Final Solar PEIS. SEZ-specific resources and conditions will guide how programmatic design features are applied, for example:

- Pre-disturbance surveys shall be conducted within the SEZ and access road corridor (i.e., area of direct effects) to determine the presence and abundance of special status species, including those identified in Table 11.4.12.1-1; 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 shall be developed in coordination with the appropriate federal and state agencies.

- Avoiding or minimizing disturbance of playa habitat on the SEZ shall be used to reduce or eliminate impacts on the Blaine fishhook cactus, Needle

Mountains milkvetch, western snowy plover, Desert Valley kangaroo mouse, and Pahranagat Valley montane vole.

- Consultation with the USFWS shall be conducted to address the potential for impacts (primarily indirect impacts) on the desert tortoise, a species listed as threatened under the ESA. Consultation will identify an appropriate survey protocol, avoidance and minimization measures, and, if appropriate, reasonable and prudent alternatives, reasonable and prudent measures, and terms and conditions for incidental take statements.

It is anticipated that implementation of these 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, updates to those analyses due to changes to the SEZ boundaries, and consideration of comments received as applicable, no SEZ-specific design features for special status species 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 Section 7 consultations.

11.4.13 Air Quality and Climate

11.4.13.1 Affected Environment

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

11.4.13.1.1 Existing Air Emissions

The Draft Solar PEIS presented Lincoln 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 and emissions from fires. In the more recent data, all emissions were lower. These changes would not affect the modeled air quality impacts presented in this update.

11.4.13.1.2 Air Quality

The calendar quarterly average NAAQS of 1.5 $\mu g/m^3$ for lead presented in Table 11.4.13.1-2 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, 1-hour O_3, and annual PM_{10} standards have been revoked as well (EPA 2011b). These changes do not affect the modeled air quality impacts

presented in this update. Nevada State Ambient Air Quality Standards (SAAQS) have not been changed.

11.4.13.2 Impacts

11.4.13.2.1 Construction

Methods and Assumptions

Except for the area disturbed at any one time during construction, the methods and modeling assumptions have not changed substantially from those presented in the Draft Solar PEIS. On the basis of the reduced size of the SEZ, air quality impacts for this Final Solar PEIS were remodeled assuming that two project areas of 3,000 acres (12.14 km^2) each and 6,000 acres (24.28 km^2) in total, located in the southern portion of the SEZ close to nearby residences, could be disturbed at the same time. The Draft Solar PEIS had assumed that three such project areas of 3,000 acres (12.14 km^2) each and 9,000 acres (36.42 km^2) in total could be disturbed at the same time.

In the Draft Solar PEIS, concentrations at human receptors were estimated indirectly from contours based on modeled concentrations at gridded receptor locations. In this Final Solar PEIS, concentrations were estimated directly at those receptors.

Results

Potential particulate impacts on air quality from construction were remodeled based on the updated boundaries of the proposed Dry Lake Valley North SEZ.[2] Changes in magnitude to predicted impacts at the boundary would be expected to be larger than changes at greater distances from the SEZ. Table 11.4.13.2-1 presents the updated maximum modeled concentrations from construction fugitive dust.

Except for 24-hour $PM_{2.5}$, overall concentration estimates are less than those predicted in the Draft Solar PEIS, as would be expected given the reduction in the area assumed to be disturbed. The removal of the northern portion and the eastern panhandle of the proposed SEZ from consideration in this update required rearrangement of source areas for modeling. This

[2] 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. It has been assumed that an area of 6,000 acres (24.28 km^2) in total would be disturbed continuously, and thus 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.

TABLE 11.4.13.2-1 Maximum Air Quality Impacts from Emissions Associated with Construction Activities for the Proposed Dry Lake Valley North SEZ as Revised

Pollutant[a]	Averaging Time	Rank[b]	Concentration (μg/m^3) Maximum Increment[b]	Background[c]	Total	NAAQS/ SAAQS	Percentage of NAAQS/SAAQS Increment	Total
PM_{10}	24 hours	H6H	347	97.0	444	150	232	296
	Annual	–[d]	57.4	22.0	79.4	50	115	159
$PM_{2.5}$	24 hours	H8H	24.8	10.2	35.0	35	71	100
	Annual	–	5.7	4.1	9.8	15	38	65

[a] $PM_{2.5}$ = particulate matter with a diameter of ≤2.5 μm; PM_{10} = particulate matter with a diameter of ≤10 μm.

[b] Concentrations for attainment demonstration are presented. H6H = highest of the sixth-highest concentrations at each receptor over the 5-year period. H8H = highest of the multiyear average of the eighth-highest concentrations at each receptor over the 5-year period. For the annual average, multiyear averages of annual means over the 5-year period are presented. Maximum concentrations are predicted to occur at the site boundaries.

[c] See Table 11.4.13.1-2 of the Draft Solar PEIS.

[d] A dash indicates not applicable.

rearrangement probably accounts for the small increase in the levels of 24-hour $PM_{2.5}$ predicted for this Final Solar PEIS. Despite this increase, the updated predictions are still consistent with the conclusion in the Draft Solar PEIS that maximum PM_{10} levels in the vicinity of the SEZ could exceed standard levels used for comparison during construction of solar facilities. These high PM_{10} concentrations would be limited to the immediate areas surrounding the SEZ boundaries and would decrease quickly with distance.

The reduction in the area assumed to be disturbed for the proposed Dry Lake Valley North SEZ meant that the nearest towns analyzed for this Final Solar PEIS were different than the nearest towns analyzed for the Draft Solar PEIS. With one exception, this analysis predicted smaller concentrations at nearby human receptor locations than were predicted in the Draft Solar PEIS. Even with this one exception, the conclusions presented in the Draft Solar PEIS remain valid.

Updated 24-hour and annual PM_{10} concentration increments at both the surrogate receptors[3] for the nearest Class I Area (Zion NP in Utah) and at the National Park itself are lower than those presented in the Draft Solar PEIS. The conclusion in the Draft Solar PEIS that the PM_{10} PSD Class I increments would not be exceeded remains valid.

[3] Because the nearest Class I area is more than 31 mi (50 km) from the SEZ (which exceeds the maximum modeling distance), several regularly spaced receptors in the direction of the nearest Class I area were selected as surrogates for the PSD analysis.

As stated in the Draft Solar PEIS, predicted 24-hour and annual PM_{10} 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 air quality impacts on nearby communities would be much lower. Modeling indicates that emissions from construction activities are not anticipated to exceed Class I PSD PM_{10} increments at the nearest federal Class I area (Zion NP in Utah). Construction activities are not subject to the PSD program, and the comparison provides only a screen for gauging the size of the impact. Accordingly, it is anticipated that impacts of construction activities on ambient air quality would be moderate and temporary.

Considering the reduced size of the SEZ, emissions from construction equipment and vehicles would be less that those estimated in the Draft Solar PEIS. Any potential impacts on AQRVs at nearby federal Class I areas would be less. Thus, as concluded in the Draft, emissions from construction-related equipment and vehicles are temporary and would cause some unavoidable but short-term impacts.

11.4.13.2.2 Operations

The reduction in the developable area of the proposed Dry Lake Valley North SEZ by about 67% decreases the generation capacity and annual power generation by a similar percentage and thus decreases the potentially avoided emissions presented in the Draft Solar PEIS. Table 11.4.13.2-2 in the Draft Solar PEIS provided estimates for emissions potentially avoided by a solar facility. These estimates were updated by reducing the tabulated emissions by about 67%, as shown in the revised Table 11.4.13.2-2. For example, depending on the technology used, up to 4,725 tons of NO_x per year (= 32.61% × the low-end value of 14.488 tons per year tabulated in the Draft Solar PEIS) could be avoided by full solar development of the revised area of the proposed Dry Lake Valley North SEZ. Although the total emissions avoided by full solar development of the proposed Dry Lake Valley North SEZ are considerably reduced from those presented in the Draft Solar PEIS, the conclusions of the Draft Solar PEIS remain valid; that is, if the proposed Dry Lake Valley North SEZ were fully developed, the emissions avoided could be substantial. Power generation from fossil fuel–fired power plants accounts for about 93% of the total electric power generated in Nevada, of which the contributions from natural gas and coal combustion are comparable (EPA 2009a). Thus, solar facilities to be built in the Dry Lake Valley North SEZ could avoid relatively more fossil fuel emissions than those built in other states that rely less on fossil fuel–generated power.

11.4.13.2.3 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.

TABLE 11.4.13.2-2 Annual Emissions from Combustion-Related Power Generation Avoided by Full Solar Development of the Proposed Dry Lake Valley North SEZ as Revised

Area Size (acres)	Capacity (MW)[a]	Power Generation (GWh/yr)[b]	Emissions Displaced (tons/yr; 10^3 tons/yr for CO_2)[c]			
			SO_2	NO_x	Hg	CO_2
25,069	2,228–4,011	3,904–7,027	5,508–9,915	4,725–8,504	0.031–0.057	3,032–5,458
Percentage of total emissions from electric power systems in the state of Nevada[d]			10–19%	10–19%	10–19%	10–19%
Percentage of total emissions from all source categories in the state of Nevada[e]			8.4–15%	3.1–5.6%	–[f]	5.6–10%
Percentage of total emissions from electric power systems in the six-state study area[d]			2.2–4.0%	1.3–2.3%	1.1–1.9%	1.2–2.1%
Percentage of total emissions from all source categories in the six-state study area[e]			1.2–2.1%	0.17–0.31%	–	0.36–0.65%

[a] It is assumed that the SEZ would eventually have development on 80% of the lands and that a range of 5 acres (0.020 km^2) per MW (for parabolic trough technology) to 9 acres (0.036 km^2) per MW (power tower, dish engine, and PV technologies) would be required.

[b] Assumed a capacity factor of 20%.

[c] Composite combustion-related emission factors for SO_2, NO_x, Hg, and CO_2 of 2.82, 2.42, 1.6×10^{-5}, and 1,553 lb/MWh, respectively, were used for the state of Nevada.

[d] Emission data for all air pollutants are for 2005.

[e] Emission data for SO_2 and NO_x are for 2002, while those for CO_2 are for 2005.

[f] A dash indicates not estimated.

Sources: EPA (2009a,b); WRAP (2009).

11.4.13.3 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 BLM's 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, updates to those analyses due to changes to the SEZ boundaries, and consideration of comments received as applicable, no SEZ-specific design features for air quality 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.

11.4.14 Visual Resources

11.4.14.1 Affected Environment

The proposed Dry Lake Valley North SEZ boundaries have been revised and extend approximately 11.3 mi (18.2 km) north–south and approximately 5.7 mi (9.2 km) wide (see Figure 11.4.14.1-1). The boundaries of the proposed SEZ have been changed to exclude mainly the northern portion of the SEZ; 48,148 acres (195 km^2) were excluded. In addition, 3,657 acres (15 km^2) of wetland and dry lake within the SEZ boundaries have been identified as non-development areas. The remaining developable area within the SEZ now includes an area of 25,069 acres (101.5 km^2). Because of the reduction in size of the SEZ, the total acreage of the lands visible within the 25-mi (40-km) viewshed of the SEZ has decreased.

In addition, as a result of the boundary changes, the Dry Lake Valley North SEZ is now limited to the Shadscale-Dominated Saline Basins and the Salt Deserts Level IV ecoregions (Bryce et al. 2003). The SEZ now ranges in elevation from 4,620 ft (1,408 m) in the central portion to approximately 4,800 ft (1,463 m) in the northern portion.

The Draft Solar PEIS presented VRI information based on 2004 data. A new VRI for the Southern Nevada District was completed in October 2011 (BLM 2011a). An updated VRI map for the SEZ and surrounding lands is shown in Figure 11.4.14.1-1.

The Dry Lake Valley is an open valley blanketed with sage, rabbitbrush, and grasses (BLM 2011a). As shown in Figure 11.4.14.1-1, the updated VRI class for the SEZ is VRI Class III, indicating moderate relative visual values (BLM 2011a). The inventory indicates moderate scenic quality for the SEZ and its immediate surroundings. Areas to the east of the SEZ, near the Panaca Basin, received a high scenic quality rating and were assigned VRI Class II, including high relative visual value. Positive scenic quality attributes included its scarcity, adjacent scenery, color, and vegetation.

The SEZ also was assigned a high sensitivity level in the VRI. The Silver State OHV Trail surrounds the SEZ and is a popular trail for multiple uses. The VRI report indicates that the SEZ contains areas that are heavily used and have a high level of public interest. In addition, people have a high level of concern for the management of special areas located within and near the SEZ (BLM 2011a). For instance, the Chief Mountain SRMA is located to the southeast of the SEZ. Portions of this area are located within 1 mi (1.6 km) of the SEZ.

Lands in the Ely District Office within the 25-mi (40-km), 650-ft (198-m) viewshed of the revised SEZ include 11,081 acres (44.8 km^2) of VRI Class I areas; 80,472 acres (325.7 km^2) of VRI Class II areas, 265,234 acres (1,073.4 km^2) of VRI Class III areas, and 29,272 acres (118.5 km^2) of VRI Class IV areas.

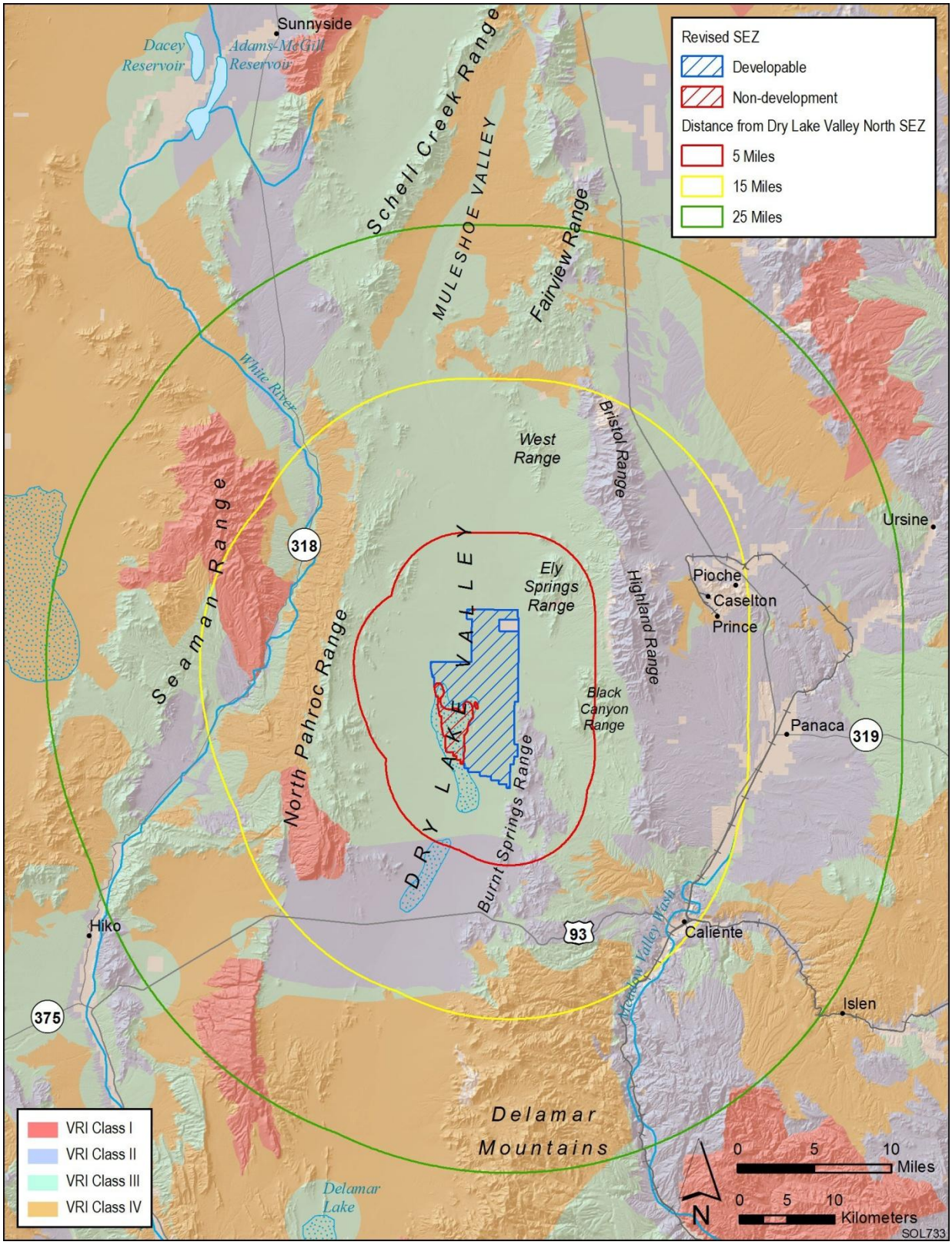

FIGURE 11.4.14.1-1 Visual Resource Inventory Values for the Proposed Dry Lake Valley North SEZ as Revised

11.4.14.2 Impacts

The reduction in size of the proposed Dry Lake Valley North SEZ substantially decreases the total visual impacts associated with solar energy development in the SEZ. It limits the total amount of solar facility infrastructure that would be visible and reduces the geographic extent of the visible infrastructure.

The reduction in size of the SEZ eliminated approximately 63% of the original SEZ. The resulting visual contrast reduction for any given point within view of the SEZ would vary greatly depending on the viewpoint's distance and direction from the SEZ. Contrast reduction generally would be greatest for viewpoints closest to the portions of the SEZ that were eliminated and especially for those that had broad wide-angle views of these areas. In general, contrast reductions also would be larger for elevated viewpoints relative to non-elevated viewpoints, because the reduction in area of the solar facilities would be more apparent when looking down at the SEZ than when looking across it.

11.4.14.2.1 Impacts on the Proposed Dry Lake Valley North SEZ

Although the reduction in size of the SEZ substantially reduces visual contrasts associated with solar development, solar development still would involve major modification of the existing character of the landscape; it likely would dominate the views from most locations within the SEZ. Additional impacts would occur as a result of the construction, operation, and decommissioning of related facilities, such as access roads and electric transmission lines. In general, strong visual contrasts from solar development still would be expected to be observed from viewing locations within the SEZ.

11.4.14.2.2 Impacts on Lands Surrounding the Proposed Dry Lake Valley North SEZ

For the Draft Solar PEIS, preliminary viewshed analyses were conducted to identify which lands surrounding the proposed SEZ could have views of solar facilities in at least some portion of the SEZ (see Appendices M and N of the Draft for important information on assumptions and limitations of the methods used). Four viewshed analyses were conducted, assuming four different heights representative of project elements associated with potential solar energy technologies: PV and parabolic trough arrays, 24.6 ft (7.5 m); solar dishes and power blocks for CSP technologies, 38 ft (11.6 m); transmission towers and short solar power towers, 150 ft (45.7 m); and tall solar power towers, 650 ft (198.1 m).

These same viewsheds were recalculated in order to account for the boundary changes described in the Supplement to the Draft Solar PEIS. Figure 11.4.14.2-1 shows the combined results of the viewshed analyses for all four solar technologies. The colored segments indicate areas with clear lines of sight to one or more areas within the SEZ and from which solar facilities within these areas of the SEZ would be expected to be visible, assuming the absence of screening vegetation or structures and adequate lighting and other atmospheric conditions. The light brown

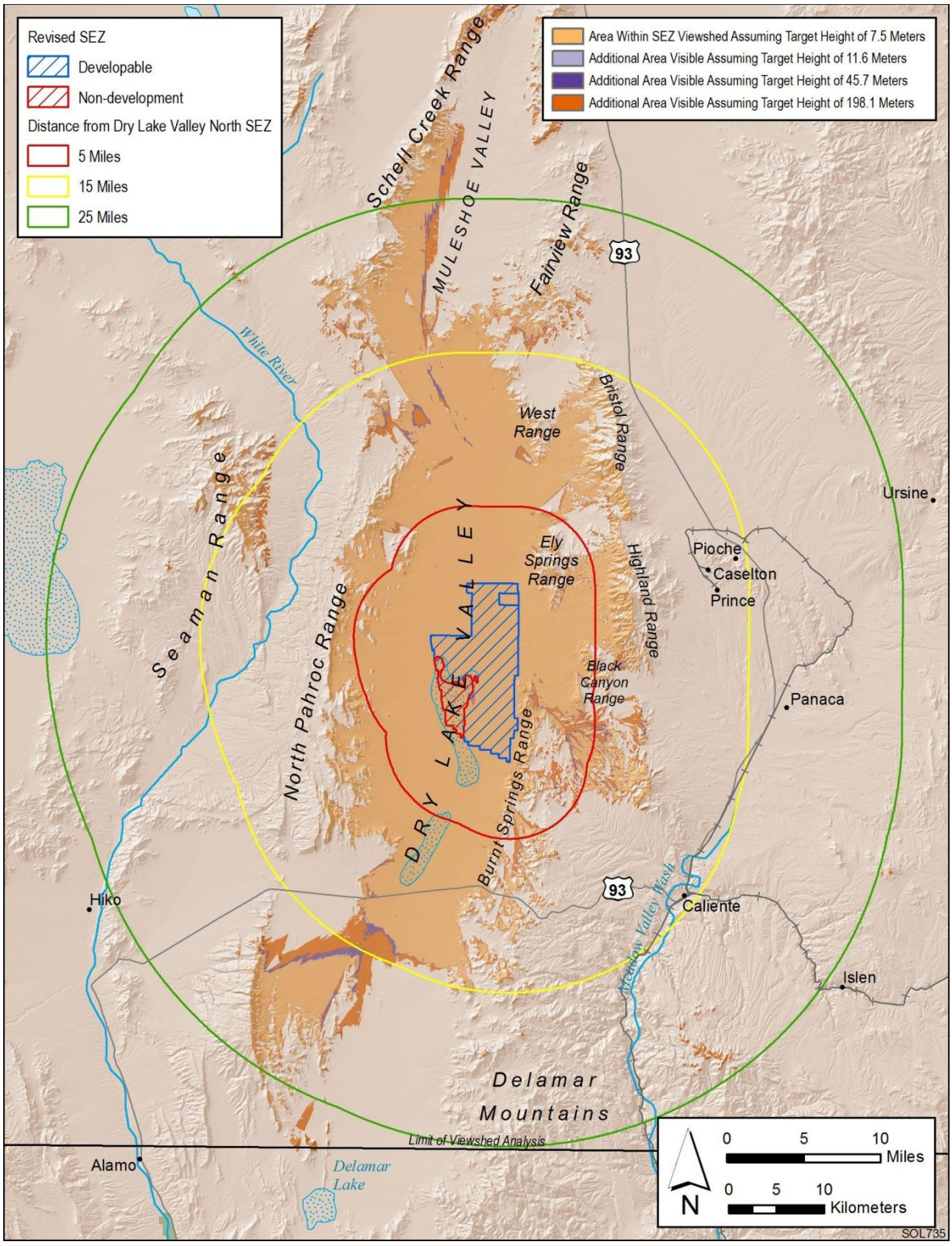

FIGURE 11.4.14.2-1 Viewshed Analyses for the Proposed Dry Lake Valley North SEZ as Revised and Surrounding Lands, Assuming Viewshed Heights of 24.6 ft (7.5 m), 38 ft (11.6 m), 150 ft (45.7 m), and 650 ft (198.1 m) (shaded areas indicate lands from which solar development and/or associated structures within the SEZ could be visible)

areas are locations from which PV and parabolic trough arrays located in the SEZ could be visible. Solar dishes and power blocks for CSP technologies would be visible from the areas shaded in light brown and the additional areas shaded in light purple. Transmission towers and short solar power towers would be visible from the areas shaded light brown, light purple, and the additional areas shaded in dark purple. Power tower facilities located in the SEZ could be visible from areas shaded light brown, light purple, dark purple, and at least the upper portions of power tower receivers in the additional areas shaded in medium brown.

11.4.14.2.3 Impacts on Selected Federal-, State-, and BLM-Designated Sensitive Visual Resource Areas and Other Lands and Resources

Figure 11.4.14.2-2 shows the results of a GIS analysis that overlays selected federal-, state-, and BLM-designated sensitive visual resource areas onto the combined tall solar power tower (650 ft [198.1 m]) and PV and parabolic trough array (24.6 ft [7.5 m]) viewsheds in order to illustrate which of these sensitive visual resource areas would have views of (and potentially be subject to visual impacts from) solar facilities within the SEZ. Distance zones that correspond with BLM's VRM system-specified foreground-middleground distance (5 mi [8 km]), background distance (15 mi [24 km]), and a 25-mi (40-km) distance zone are shown to indicate the effect of distance from the SEZ on impact levels. A similar analysis was conducted for the Draft Solar PEIS.

The scenic resources included in the analysis were as follows:

- National Parks, National Monuments, National Recreation Areas, National Preserves, National Wildlife Refuges, National Reserves, National Conservation Areas, National Historic Sites;
- Congressionally authorized Wilderness Areas;
- Wilderness Study Areas;
- National Wild and Scenic Rivers;
- Congressionally authorized Wild and Scenic Study Rivers;
- National Scenic Trails and National Historic Trails;
- National Historic Landmarks and National Natural Landmarks;
- All-American Roads, National Scenic Byways, State Scenic Highways, and BLM- and USFS-designated scenic highways/byways;
- BLM-designated Special Recreation Management Areas; and
- ACECs designated because of outstanding scenic qualities.

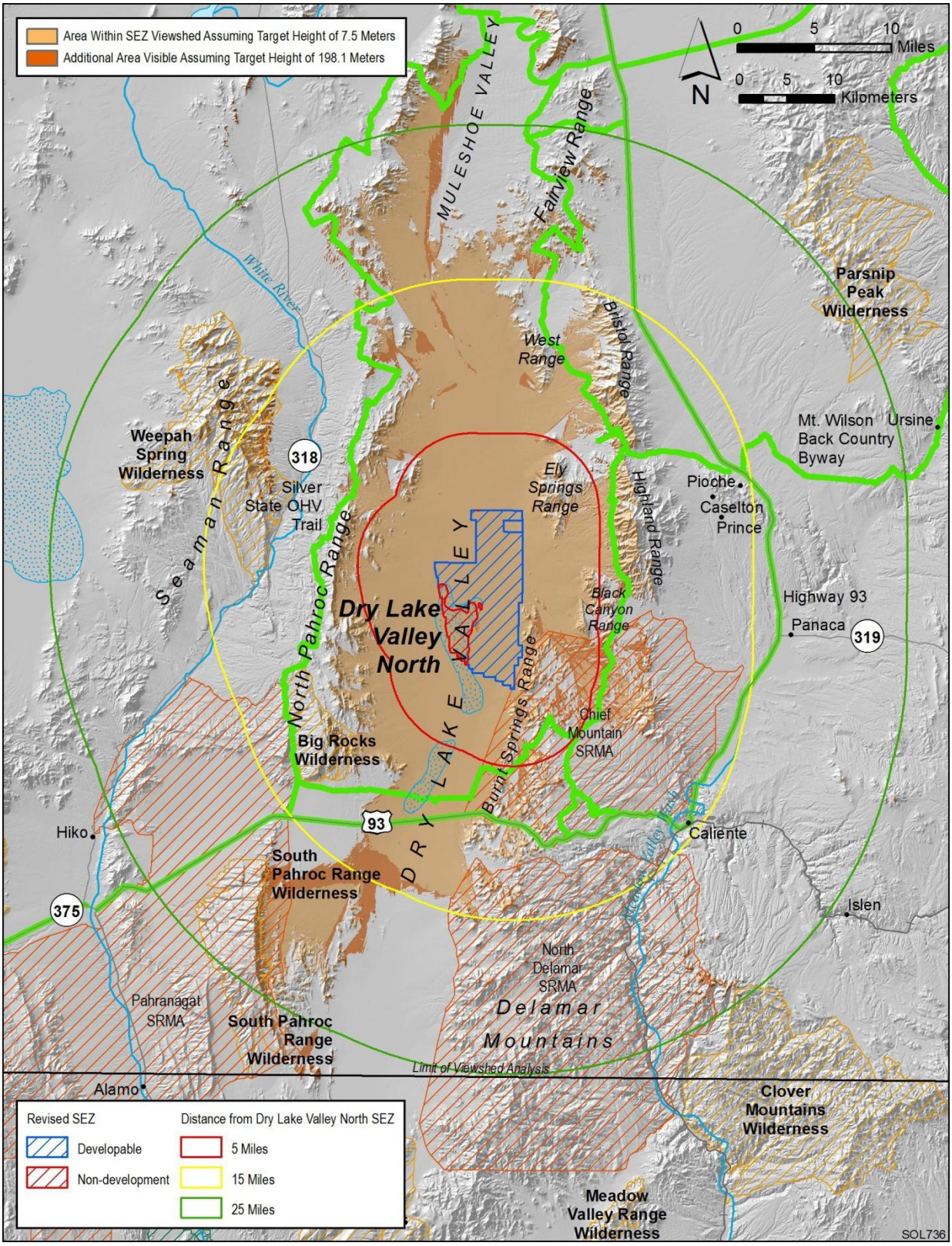

FIGURE 11.4.14.2-2 Overlay of Selected Sensitive Visual Resource Areas onto Combined 650-ft (198.1-m) and 24.6-ft (7.5-m) Viewsheds for the Proposed Dry Lake Valley North SEZ as Revised

The results of the GIS analyses are summarized in Table 11.4.14.2-1. The change in size of the SEZ alters the viewshed, such that the visibility of the SEZ and solar facilities within the SEZ from the surrounding lands would be reduced.

With the reduction in size of the SEZ, solar energy development within the SEZ would be expected to create minimal or weak visual contrasts for viewers within four of the surrounding scenic resource areas and other resources listed in Table 11.4.14.2-1. Moderate or strong visual contrasts would occur in the remaining areas, including the Big Rocks WA, the Weepah Springs WA, U.S. 93 Scenic Highway, the Silver State OHV Trail, and the Chief Mountain SRMA.

11.4.14.2.4 Summary of Visual Resource Impacts for the Proposed Dry Lake Valley North SEZ

The visual contrast analysis in the Draft Solar PEIS determined that because there could be multiple solar facilities within the Dry Lake Valley North SEZ, a variety of technologies employed, and a range of supporting facilities required, solar development within the SEZ would make it essentially industrial in appearance and would contrast strongly with the surrounding mostly natural-appearing landscape.

The reduction in size of the SEZ diminishes the visual contrast associated with solar facilities as seen both within the SEZ and from surrounding lands in both daytime and nighttime views. The reductions in visual contrast can be summarized as follows:

- Within the Dry Lake Valley North SEZ: Contrasts experienced by viewers in the northern and eastern portion of the SEZ would be reduced because of the elimination of 48,148 acres (195 km^2) of land within the SEZ; however, strong contrasts still would result in the remaining developable area. A reduction in contrasts also would be present in the southwest portion of the SEZ, where 3,657 acres (15 km^2) were identified as non-developable areas because of the presence of wetland and dry lake.

- Big Rocks WA: A reduction in contrasts would be anticipated because of the removal of non-developable lands in the southwest of the SEZ; however, solar development within the SEZ still would cause weak to strong contrasts, depending on viewer location within the WA.

- Clover Mountains WA: A reduction in contrasts would be anticipated because of the reduction in size of the SEZ; however, solar development within the SEZ still would cause minimal contrasts.

- Far South Egans WA: Far South Egans WA is no longer located within the 25-mi (40-km) viewshed; expected contrast levels would be lowered from "minimal to weak" to "none."

TABLE 11.4.14.2-1 Selected Potentially Affected Sensitive Visual Resources within a 25-mi (40-km) Viewshed of the Proposed Dry Lake Valley North SEZ as Revised, Assuming a Target Height of 650 ft (198.1 m)

		Feature Area or Linear Distance		
			Visible Between	
Feature Type	Feature Name (Total Acreage)[a,b]	Visible within 5 mi[c]	5 and 15 mi	25 and 25 mi
WAs	Big Rocks (12,929 acres)	0 acres (0%)	1,450 acres (11%)	0 acres (0%)
	Clover Mountains (85,621 acres)	0 acres (0%)	0 acres (0%)	15 acres (0%)
	South Pahroc Range (25,674 acres)	0 acres (0%)	0 acres (0%)	2,316 acres (9%)
	Weepah Spring (51,309 acres)	0 acres (0%)	3,294 acres (6%)	3,976 acres (8%)
Scenic Highway	U.S. 93 (149 mi)	0 mi (0%)	9 mi (6%)	0 mi (0%)
	Silver State OHV Trail (240 mi)	1.5 mi (0.6%)	32.9 mi (14%)	5.6 mi (2%)
SRMAs	Chief Mountain (111,151 acres)	15,727 acres (14%)	16,321 acres (15%)	0 acres (0%)
	North Delamar (202,839 acres)	0 acres (0%)	3,289 acres (2%)	861 acres (0%)
	Pahranagat (298,565 acres)	0 acres (0%)	0 acres (0%)	8,114 acres (3%)

[a] The Far South Egans and Parsnip Peak WAs are not included in this table. These areas were in the viewshed of the original proposed SEZ and were included in the corresponding table in the Draft Solar PEIS; however, these areas are not within the viewshed of the proposed SEZ as revised.

[b] To convert acres to km^2, multiply by 0.004047. To convert mi to km, multiply by 1.609.

[c] Percentage of total feature acreage or road length viewable.

- Parsnip Peak WA: Parsnip Peak WA is no longer located within visible portions of the 25 mi (40-km) viewshed; expected contrast levels would be lowered from "minimal to weak" to "none."

- South Pahroc Range WA: A reduction in contrasts would be anticipated because of the removal of undevelopable lands in the southwest portion of the SEZ; expected contrast levels would be lowered from "weak" to "minimal to weak."

- Weepah Springs WA: A reduction in contrasts would be anticipated because of the elimination of acreage in the northern portion of the SEZ; however, solar development within the SEZ still would cause weak to strong contrasts, depending on viewer location within the WA.

- U.S. 93 Scenic Highway: A reduction in contrasts would be anticipated because of the removal of non-developable lands in the southwest portion of the SEZ; solar development within the SEZ still would cause minimal to moderate contrasts, depending on viewer location on U.S. 93.

- Silver State OHV Trail: A reduction in contrasts would be anticipated because of the elimination of acreage in the northern and eastern portions of the SEZ; however, solar development within the SEZ still would cause weak to strong contrasts, depending on viewer location on the trail.

- Chief Mountain SRMA: A reduction in contrasts would be anticipated because of the revision of the SEZ. Approximately 23,387 acres (94.6 km^2) were visible within 5 mi (8.0 km) of the SEZ as it was originally proposed in the Draft Solar PEIS; with the elimination of the northern portion and the removal of non-developable areas, this has been reduced to approximately 15,727 acres (63.6 km^2). While the amount of acreage has been reduced, solar development within the SEZ still would cause weak to strong contrasts, depending on viewer location within the SRMA. The highest contrast levels would be expected at higher elevations in the western portion of the SRMA, with lower levels of contrast expected for lower elevations, particularly in the eastern and southern portions of the SRMA.

- North Delamar SRMA: A reduction in contrasts would be anticipated because of the reduction in size of the SEZ; expected contrast levels would be lowered from "weak" to "minimal."

- Pahranagat SRMA: A reduction in contrasts would be anticipated because of the reduction in size of the SEZ; however, solar development within the SEZ still would cause minimal to weak contrasts, depending on viewer location within the SRMA.

11.4.14.3 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, updates to those analyses due to changes to the SEZ boundaries, and consideration of comments received as applicable, no SEZ-specific design features for visual 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.

11.4.15 Acoustic Environment

11.4.15.1 Affected Environment

The developable area of the proposed Dry Lake Valley North SEZ was reduced by about 67%, from 76,874 acres (311.09 km^2) to 25,069 acres (101.45 km^2); mainly the northern portion of the SEZ was removed, and a wetland and dry lake area was identified as a non-development area. These reductions in the boundaries increased the distances to nearby residences or communities by up to 3 mi (5 km). Consequently, noise levels at these receptors will be somewhat lower than those presented in the Draft Solar PEIS.

Comments provided by the DoD on the Supplement to the Draft Solar PEIS noted that MTRs and operating areas authorized for supersonic flight by the Federal Aviation Administration (FAA) at and above 5,000-ft (1,524-m) AGL exist directly above the proposed Dry Lake Valley North SEZ. The comments indicated that noise and associated overpressures created by authorized supersonic flight above and proximal to the SEZ could adversely affect solar technology and/or infrastructure.

11.4.15.2 Impacts

The screening-level noise levels estimated in both the Draft Solar PEIS and this Final Solar PEIS included attenuation due to geometrical spreading and ground effects over flat terrain only. With the inclusion of other attenuation mechanisms such as air absorption and screening effects of natural barriers (i.e., topographic features), noise levels at receptors more than several miles from the source would typically be below background levels. Note that the closest

communities such as Caselton and Prince are located more than 12 mi (19 km) east of the SEZ and screened from the area by the Highland and Black Canyon mountain ranges.

11.4.15.2.1 Construction

The noise impact analysis in the Draft Solar PEIS assumed that a maximum of three projects (9,000 acres [36.4 km^2]) would be developed at any one time within the SEZ. With the reduction in size of the proposed SEZ, the noise impact analysis for this Final Solar PEIS assumes that two projects (6,000 acres [24.3 km^2]) would be under development at a given time.

The conclusions in the Draft Solar PEIS remain valid. With the updated SEZ boundaries, estimated construction noise levels from a single project at the nearest residences would be about 14 dBA, and for a 10-hour daytime work schedule, a 40-dBA L_{dn} is estimated, that is, no contribution from construction activities. If two projects were to be built in the eastern portion of the proposed SEZ, noise levels at the nearest residences would be about 3 dBA higher, but there would be no increase in L_{dn}. In either case, construction noise would be well below a typical daytime mean rural background level of 40 dBA, and the estimated L_{dn} at these residences would be well below the EPA guidance of 55 dBA L_{dn} for residential areas.

As stated in the Draft Solar PEIS, noise at the Chief Mountains SRMA, which is managed primarily for motorized OHV recreation, is not likely to be an issue.

Construction noise and vibration impacts would be the same or less than those presented in the Draft Solar PEIS, and the conclusions of the Draft remain valid. Construction would cause minimal, unavoidable, but localized, short-term noise impacts on neighboring communities. No adverse vibration impacts are anticipated from construction activities, including pile driving for dish engines.

11.4.15.2.2 Operations

Because of boundary changes and the identification of non-development areas for the proposed Dry Lake Valley North SEZ, noise impacts for this Final Solar PEIS were remodeled.

Parabolic Trough and Power Tower

If TES were used, the effect of temperature inversions at night could increase the noise levels associated with operations. With the updated boundaries, nighttime noise levels at the nearest residences estimated for this Final Solar PEIS would be expected to be at most the same as the typical nighttime mean rural background level of 30 dBA. However, the noise level would be much lower than this value if air absorption and other attenuation mechanisms were considered, and the day-night average noise level would be about 41 dBA L_{dn}, well below the EPA guideline of 55 dBA L_{dn} for residential areas. The conclusion of the Draft Solar PEIS that

operating parabolic trough or power tower facilities using TES could result in minimal adverse noise impacts on the nearest residences remains valid.

Dish Engines

The reduction in size of the proposed Dry Lake Valley North SEZ by about 67% would reduce the number of dish engines by a similar percentage. The estimated noise level at the nearest residences would be about 34 dBA, lower than the typical daytime mean rural background level of 40 dBA, and for 12 hours of operation, about 41 dBA L_{dn}, well below the EPA guideline of 55 dBA L_{dn} for residential areas. The conclusion of the Draft Solar PEIS that noise levels at the nearest residences caused by operating a dish engine facility could cause minor adverse impacts on the nearest residence, depending on background noise levels and meteorological conditions, remains valid.

Changes in the proposed SEZ boundaries 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.

11.4.15.2.3 Decommissioning and Reclamation

The discussion in the Draft Solar PEIS remains valid. Decommissioning and reclamation activities would be of short duration, and their potential noise impacts would be minor and temporary. Potential noise and vibration impacts on surrounding communities would be correspondingly less than those for construction activities.

11.4.15.3 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. Because of the considerable separation distances, activities within the proposed Dry Lake Valley North SEZ during construction and operation would be anticipated to cause only minimal increases in noise levels at the nearest residences and to have minor impacts on nearby specially designated areas.

On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those analyses due to changes to the SEZ boundaries, and consideration of comments received as applicable, no SEZ-specific design features were identified for noise. Some SEZ-specific design features may be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

11.4.16 Paleontological Resources

11.4.16.1 Affected Environment

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

- The change in developable area for the proposed Dry Lake Valley North SEZ has increased the percentage of playa deposits, PFYC Class 3b, relative to the alluvial deposits that are PFYC Class 2.

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

11.4.16.2 Impacts

The assessment provided in the Draft Solar PEIS remains valid. Few, if any, impacts on significant paleontological resources are likely to occur in the proposed Dry Lake Valley North SEZ. However, a more detailed look at the geological deposits of the SEZ is needed to determine whether a paleontological survey is warranted.

11.4.16.3 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 analyses conducted for the Draft Solar PEIS, updates to those analyses due to changes to the SEZ boundaries, and consideration of comments received as applicable, no SEZ-specific design features for paleontological resources have been identified. If the geological deposits are determined to be as described in the Draft Solar PEIS and are predominantly classified as PFYC Class 2, mitigation of paleontological resources within most of the proposed Dry Lake Valley North SEZ would not likely be necessary. The need for and nature of any SEZ-specific design features for the remaining portions of the 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.

11.4.17 Cultural Resources

11.4.17.1 Affected Environment

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

- The amount of land that has been surveyed for cultural resources has increased slightly from 2.8 to 3.5% of the SEZ, totaling 880 acres (3.6 km^2).

- The number of cultural resource sites in the SEZ has decreased from 53 to 21 sites; however, the 4 sites identified in the Draft Solar PEIS as potentially eligible for listing in the NRHP are still located within the SEZ.

- The historic mining claims located to the north and east of the SEZ are no longer within the 5-mi (8-km) buffer.

- The distance from the SEZ boundary to the NRHP-listed Bristol Wells site has increased from 5 mi (8 km) to 14 mi (23 km).

- A tribally approved ethnographic study of the Dry Lake Valley North SEZ was not conducted; however, ethnographic studies of the Delamar Valley SEZ immediately to the south and other nearby SEZs were conducted (SWCA and University of Arizona 2011), and some of that information could be applicable to the Dry Lake Valley North SEZ. Tribes have expressed concern about the cultural resources that are found in the SEZs and their encompassing landscape, as well as important water sources and traditional plant and animal resources. The Paiute are concerned with the effects on their cultural and spiritual lifeways of harnessing and distributing the sun's energy.

- 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 stratified random sample survey of 1,253 acres (5 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, some 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 2011b), including follow-up to recent ethnographic studies with tribes not included in the original studies to determine whether those tribes have similar concerns.

11.4.17.2 Impacts

As stated in the Draft Solar PEIS, direct impacts on significant cultural resources could occur in the proposed Dry Lake Valley North SEZ; however, further investigation is needed. Impacts on prehistoric cultural resources are possible in the proposed Dry Lake Valley North SEZ in the dry lake, alluvial fans, and dune areas in the southern portion of the SEZ. Impacts on historic resources are also possible, but to a lesser degree. The following update is based on the revised boundaries of the SEZ:

- Thirty-two fewer sites are potentially affected within the reduced footprint of the SEZ; however, there are still four sites located in the proposed SEZ that are known to be eligible for listing in the NRHP.

11.4.17.3 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, updates to those analyses due to changes to the SEZ boundaries, and consideration of comments received as applicable, the following SEZ-specific design feature for cultural resources has been identified:

- The existing access road that connects the proposed SEZ to U.S. 93 should be upgraded instead of constructing a new access road to reduce ground disturbances and the potential for impacts on cultural resources.

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.

11.4.18 Native American Concerns

11.4.18.1 Affected Environment

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

- A tribally approved ethnographic study of the Dry Lake Valley North SEZ was not conducted; however, ethnographic studies of the Delamar Valley SEZ and other nearby SEZs were conducted (SWCA and University of Arizona 2011), and some of that information could be applicable to the Dry Lake Valley North SEZ. Tribes have expressed concerns about the cultural resources that are found in the SEZs and their encompassing landscape, as well as important water sources and traditional plant and animal resources.

- The Paiute are concerned with the effects on their cultural and spiritual lifeways of harnessing and distributing the sun's energy.

- Tribal representatives from the Moapa Band of Paiute Indians believe that all cultural resources and landscapes are important in helping the Southern Paiute to understand their past, present, and future.

- Robber Roost Hills, Stapely Knoll, Fly Springs Range, Highland Range, North Pahroc Range, Black Rock Knoll, Clover Mountains, Delamar Mountains, and Fairview Range are all elevated areas found outside of the Dry Lake Valley North SEZ that may be of significant importance to tribes. Visual impacts on the valley from mountain summits are likely to occur as a result of solar development.

- Portions of Coyote Wash, Bailey Wash, Silverhorn Wash, and Wheatgrass Wash intersect the proposed Dry Lake Valley North SEZ and feed into the Pleistocene Dry Lake. A series of springs is found in the Delamar Mountains, Fairview Range, and North Pahroc Range. Meadow Valley Wash is found to the east of the Delamar and Clover Mountains. These water resources are likely important to tribes and would be directly affected by solar development.

- Mining sites, ranching sites, and the San Pedro–Los Angeles–Salt Lake Railroad located in the surrounding area may have significant historical importance to the Southern Paiute and Western Shoshone and may be affected by solar development.

- Plants and animals used as traditional sources of food and medicine may reside in the proposed SEZ and would be directly affected by solar development.

- Rock art and ceremonial areas may exist in areas of importance to the Southern Paiute and Western Shoshone. Possible locations include the foothills of surrounding mountain ranges and their associated canyons. Depending on their locations, these areas may be directly or indirectly affected by solar development within the proposed SEZ.

11.4.18.2 Impacts

The description of potential concerns provided in the Draft Solar PEIS remains valid. During past project-related consultation, the Southern Paiute have expressed concern over project impacts on a variety of resources, including food plants, medicinal plants, plants used in basketry, plants used in construction, large game animals, small game animals, birds, and sources of clay, salt, and pigments (Stoffle and Dobyns 1983). The construction of utility-scale solar energy facilities within the proposed SEZ would 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 following impacts have been identified:

- Development within the proposed Dry Lake Valley North SEZ could result in visual impacts on Dry Lake Valley from surrounding elevated areas and mountain tops.

- Development within the proposed Dry Lake Valley North SEZ may affect the spiritual connection that the Southern Paiute have to water as well as the quantity of water naturally stored in underground aquifers. Tribes are also deeply concerned that energy development within the area will greatly reduce the amount of water that is available to the tribe and to plants and animals in the valley.

- Development of a project area within the SEZ will directly affect culturally important plant and animal resources as it will likely require the grading of the project area.

11.4.18.3 SEZ-Specific Design Features and Design Feature Effectiveness

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 impact analyses conducted for the Draft Solar PEIS, updates to those analyses due to changes in SEZ boundaries, 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. Potentially significant sites and landscapes in the vicinity of the SEZ associated with numerous washes, mountain springs, and other water sources, the Delamar Mountains, Fairview Range, North Pahroc Range, Robber Roost Hills, Stapely Knoll, Fly Springs Range, Highland Range, Black Rock Knoll, and the Clover Mountains, as well as trails, mineral sources, historic mining and ranching sites, burial sites, and other ceremonial and rock art areas, and traditionally important plant and animal resources should be considered and discussed during consultation.

11.4.19 Socioeconomics

11.4.19.1 Affected Environment

Although the boundaries of the Dry Lake Valley North SEZ have been 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.

11.4.19.2 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 the BLM, the in-migration of solar facility workers and their families, and impacts on local housing markets and local community service employment. The impact assessment has been updated in the following sections.

11.4.19.2.1 Solar Trough

Construction

Total construction employment impacts in the ROI (including direct and indirect impacts) from the use of solar trough technologies would be up to 6,048 jobs (Table 11.4.19.2-1). Construction activities would constitute 0.4 % of total ROI employment.

TABLE 11.4.19.2-1 ROI Socioeconomic Impacts Assuming Full Build-out of the Proposed Dry Lake Valley North SEZ as Revised with Solar Trough Facilities

Parameter	Maximum Annual Construction Impacts[a]	Annual Operations Impacts[b]
Employment (no.)		
Direct	3,488	874
Total	6,048	1,347
Income[c]		
Total	369.5	50.7
Direct state taxes[c]		
Sales	2.4	0.3
Income	0.7	0.1
BLM payments[c,d]		
Acreage-related fee	NA[e]	1.6
Capacity fee[f]	NA	26.4
In-migrants (no.)	1,486	111
Vacant housing[g] (no.)	513	69
Local community service employment		
Teachers (no.)	13	1
Physicians (no.)	3	0
Public safety (no.)	3	0

[a] Construction impacts were based on the development at the site in a single year; it was assumed that several facilities with a combined capacity of up to 1,200 MW (corresponding to 6,000 acres [18 km^2] of land disturbance) could be built.

[b] Operations impacts were based on full build-out of the site, producing a total output of 4,011 MW.

[c] Values are reported in $ million 2008.

[d] There is currently no individual income tax in Nevada; data provided are for workers who would reside in Utah.

[e] NA = not applicable.

[f] The BLM annual capacity payment was based on a fee of $6,570/MW, established by the BLM in its Solar Energy Interim Rental Policy (BLM 2010b), assuming a solar facility with no storage capability and full build-out of the site. Projects with 3 or more hours of storage would generate higher payments, based on a fee of $7,884/MW.

[g] Construction activities would affect vacant rental housing; operations activities would affect vacant owner-occupied housing.

A solar facility would also produce $369.5 million in income. Direct sales taxes would be $2.4 million; direct income taxes in Utah, $0.7 million.

Given the scale of construction activities and the low likelihood that the entire construction workforce in the required occupational categories would be available within the ROI, construction of a solar facility would mean that some in-migration of workers and their families from outside the ROI would be required, with up to 1,486 persons in-migrating into the ROI. Although in-migration may potentially affect local housing markets, the relatively small number of in-migrants and the availability of temporary accommodations (hotels, motels, and mobile home parks) mean that the impact of solar facility construction on the number of vacant rental housing units would not be expected to be large, with up to 513 rental units expected to be occupied in the ROI. This occupancy rate would represent 0.8% of the vacant rental units expected to be available in the ROI.

In addition to the potential impact on housing markets, in-migration would affect community service employment (education, health, and public safety). An increase in such employment would be required to meet existing levels of service in the ROI. Accordingly, up to 13 new teachers, 3 physicians, and 3 public safety employee (career firefighters and uniformed police officers) would be required in the ROI. These increases would represent 0.1% of total ROI employment expected in these occupations.

Operations

Total operations employment impacts in the ROI (including direct and indirect impacts) of a full build-out of the SEZ using solar trough technologies would be 1,347 jobs (Table 11.4.19.2-1). Such a solar facility would also produce $50.7 million in income. Direct sales taxes would be $0.3 million; direct income taxes in Utah, $0.1 million. On the basis of fees established by the BLM in its Solar Energy Interim Rental Policy (BLM 2010b), acreage–related fees would be $1.6 million, and solar generating capacity fees would total at least $26.4 million.

As for the construction workforce, operation of a solar facility likely would require some in-migration of workers and their families from outside the ROI, with up to 111 persons in migrating into the ROI. Although in-migration may potentially affect local housing markets, the relatively small number of in-migrants and the availability of temporary accommodations (hotels, motels, and mobile home parks) mean that the impact of solar facility operation on the number of vacant owner-occupied housing units would not be expected to be large, with up to 69 owner-occupied units expected to be occupied in the ROI.

In addition to the potential impact on housing markets, in-migration would affect community service (health, education, and public safety) employment. An increase in such employment would be required to meet existing levels of service in the provision of these services in the ROI. Accordingly, up to one new teacher would be required in the ROI.

11.4.19.2.2 Power Tower

Construction

Total construction employment impacts in the ROI (including direct and indirect impacts) from the use of power tower technologies would be up to 2,409 jobs (Table 11.4.19.2-2). Construction activities would constitute 0.2% of total ROI employment. Such a solar facility would also produce $147.2 million in income. Direct sales taxes would be $0.9 million; direct income taxes in Utah, $0.3 million.

Given the scale of construction activities and the low likelihood that the entire construction workforce in the required occupational categories would be available within the ROI, construction of a solar facility would mean that some in-migration of workers and their families from outside the ROI would be required, with up to 592 persons in-migrating into the ROI. Although in-migration may potentially affect local housing markets, the relatively small number of in-migrants and the availability of temporary accommodations (hotels, motels, and mobile home parks) mean that the impact of solar facility construction on the number of vacant rental housing units would not be expected to be large, with up to 204 rental units expected to be occupied in the ROI. This occupancy rate would represent 0.3% of the vacant rental units expected to be available in the ROI.

In addition to the potential impact on housing markets, in-migration would affect community service (education, health, and public safety) employment. An increase in such employment would be required to meet existing levels of service in the ROI. Accordingly, up to five new teachers, one physician, and one public safety employee would be required in the ROI. These increases would represent less than 0.1% of total ROI employment expected in these occupations.

Operations

Total operations employment impacts in the ROI (including direct and indirect impacts) of a full build-out of the SEZ using power tower technologies would be 613 jobs (Table 11.4.19.2-2). Such a solar facility would also produce $21.2 million in income. Direct sales taxes would be less than $0.1 million; direct income taxes in Utah, less than $0.1 million. On the basis of fees established by the BLM in its Solar Energy Interim Rental Policy (BLM 2010b), acreage–related fees would be $1.6 million, and solar generating capacity fees would total at least $14.6 million.

As for the construction workforce, operation of a solar facility means that some in-migration of workers and their families from outside the ROI would be required, with up to 58 persons in-migrating into the ROI. Although in-migration may potentially affect local housing markets, the relatively small number of in-migrants and the availability of temporary accommodations (hotels, motels, and mobile home parks) mean that the impact of solar facility operation on the number of vacant owner-occupied housing units would not be expected to be large, with up to 36 owner-occupied units expected to be required in the ROI.

TABLE 11.4.19.2-2 ROI Socioeconomic Impacts Assuming Full Build-out of the Proposed Dry Lake Valley North SEZ as Revised with Power Tower Facilities

Parameter	Maximum Annual Construction Impacts[a]	Annual Operations Impacts[b]
Employment (no.)		
Direct	1,389	451
Total	2,409	613
Income[c]		
Total	147.2	21.2
Direct state taxes[c]		
Sales	0.9	<0.1
Income	0.3	<0.1
BLM payments[c,d]		
Acreage-related fee	NA[e]	1.6
Capacity fee[f]	NA	14.6
In-migrants (no.)	592	58
Vacant housing[g] (no.)	204	36
Local community service employment		
Teachers (no.)	5	1
Physicians (no.)	1	0
Public safety (no.)	1	0

[a] Construction impacts were based on the development at the site in a single year; it was assumed that several facilities with a combined capacity of up to 667 MW (corresponding to 6,000 acres [18 km^2] of land disturbance) could be built.

[b] Operations impacts were based on full build-out of the site, producing a total output of 2,228 MW.

[c] Values are reported in $ million 2008.

[d] There is currently no individual income tax in Nevada; data provided are for workers who would reside in Utah.

[e] NA = not applicable.

[f] The BLM annual capacity payment was based on a fee of $6,570/MW, established by the BLM in its Solar Energy Interim Rental Policy (BLM 2010b), assuming a solar facility with no storage capability, and full build-out of the site. Projects with 3 or more hours of storage would generate higher payments, based on a fee of $7,884/MW.

[g] Construction activities would affect vacant rental housing; operations activities would affect vacant owner-occupied housing.

In addition to the potential impact on housing markets, in-migration would affect community service (education, health, and public safety) employment. An increase in such employment would be required to meet existing levels of service in the ROI. Accordingly, up to one new teacher would be required in the ROI.

11.4.19.2.3 Dish Engine

Construction

Total construction employment impacts in the ROI (including direct and indirect impacts) from the use of dish engine technologies would be up to 979 jobs (Table 11.4.19.2-3). Construction activities would constitute 0.1% of total ROI employment. Such a solar facility would also produce $59.8 million in income. Direct sales taxes would be $0.4 million; direct income taxes in Utah, $0.1 million.

Given the scale of construction activities and the low likelihood that the entire construction workforce in the required occupational categories would be available within the ROI, construction of a solar facility would mean that some in-migration of workers and their families from outside the ROI would be required, with up to 241 persons in-migrating into the ROI. Although in-migration may potentially affect local housing markets, the relatively small number of in-migrants and the availability of temporary accommodations (hotels, motels, and mobile home parks) mean that the impact of solar facility construction on the number of vacant rental housing units would not be expected to be large, with up to 83 rental units expected to be occupied in the ROI. This occupancy rate would represent 0.1% of the vacant rental units expected to be available in the ROI.

In addition to the potential impact on housing markets, in-migration would affect community service (education, health, and public safety) employment. An increase in such employment would be required to meet existing levels of service in the ROI. Accordingly, up to two new teachers, one physician, and one public safety employee would be required in the ROI. These increases would represent less than 0.1% of total ROI employment expected in these occupations.

Operations

Total operations employment impacts in the ROI (including direct and indirect impacts) of a full build-out of the SEZ using dish engine technologies would be 596 jobs (Table 11.4.19.2-3). Such a solar facility would also produce $20.6 million in income. Direct sales taxes would be $0.1 million; direct income taxes in Utah, $0.1 million. On the basis of fees established by the BLM in its Solar Energy Interim Rental Policy (BLM 2010b), acreage-related fees would be $1.6 million, and solar generating capacity fees would total at least $14.6 million.

TABLE 11.4.19.2-3 ROI Socioeconomic Impacts Assuming Full Build-out of the Proposed Dry Lake Valley North SEZ as Revised with Dish Engine Facilities

Parameter	Maximum Annual Construction Impacts[a]	Annual Operations Impacts[b]
Employment (no.)		
Direct	565	439
Total	979	596
Income[c]		
Total	59.8	20.6
Direct state taxes[c]		
Sales	0.4	<0.1
Income	0.1	<0.1
BLM payments[c,d]		
Acreage-related fee	NA[e]	1.6
Capacity fee[f]	NA	14.6
In-migrants (no.)	241	56
Vacant housing[g] (no.)	83	35
Local community service employment		
Teachers (no.)	2	0
Physicians (no.)	1	0
Public safety (no.)	1	0

[a] Construction impacts were based on the development at the site in a single year; it was assumed that several facilities with a combined capacity of up to 667 MW (corresponding to 6,000 acres [24 km^2] of land disturbance) could be built.

[b] Operations impacts were based on full build-out of the site, producing a total output of 2,228 MW.

[c] Values are reported in $ million 2008.

[d] There is currently no individual income tax in Nevada; data provided are for workers who would reside in Utah.

[e] NA = not applicable.

[f] The BLM annual capacity payment was based on a fee of $6,570/MW, established by the BLM in its Solar Energy Interim Rental Policy (BLM 2010b), assuming a solar facility with no storage capability, and full build-out of the site. Projects with 3 or more hours of storage would generate higher payments, based on a fee of $7,884/MW.

[g] Construction activities would affect vacant rental housing; operations activities would affect vacant owner-occupied housing.

As for the construction workforce, operation of a dish engine solar facility means that some in-migration of workers and their families from outside the ROI would be required, with up to 56 persons in-migrating into the ROI. Although in-migration may potentially affect local housing markets, the relatively small number of in-migrants and the availability of temporary accommodations (hotels, motels, and mobile home parks) mean that the impact of solar facility operation on the number of vacant owner-occupied housing units would not be expected to be large, with up to 35 owner-occupied units expected to be required in the ROI.

No new community service employment would be required to meet existing levels of service in the ROI.

11.4.19.2.4 Photovoltaic

Construction

Total construction employment impacts in the ROI (including direct and indirect impacts) from the use of PV technologies would be up to 457 jobs (Table 11.4.19.2-4). Construction activities would constitute less than 0.1 % of total ROI employment. Such a solar development would also produce $27.9 million in income. Direct sales taxes would be $0.2 million; direct income taxes in Utah, $0.1 million.

Given the scale of construction activities and the low likelihood that the entire construction workforce in the required occupational categories would be available with the ROI, construction of a solar facility would mean that some in-migration of workers and their families from outside the ROI would be required, with up to 112 persons in-migrating into the ROI. Although in-migration may potentially affect local housing markets, the relatively small number of in-migrants and the availability of temporary accommodations (hotels, motels, and mobile home parks) mean that the impact of solar facility construction on the number of vacant rental housing units would not be expected to be large, with up to 39 rental units expected to be occupied in the ROI. This occupancy rate would represent 0.1% of the vacant rental units expected to be available in the ROI.

In addition to the potential impact on housing markets, in-migration would affect community service (education, health, and public safety) employment. An increase in such employment would be required to meet existing levels of service in the ROI. Accordingly, up to one new teacher would be required in the ROI. This increase would represent less than 0.1% of total ROI employment expected in this occupation.

Operations

Total operations employment impacts in the ROI (including direct and indirect impacts) of a full build-out of the SEZ using PV technologies would be 59 jobs (Table 11.4.19.2-4). Such a solar facility would also produce $2.1 million in income. Direct sales taxes would be less than

TABLE 11.4.19.2-4 ROI Socioeconomic Impacts Assuming Full Build-out of the Proposed Dry Lake Valley North SEZ as Revised with PV Facilities

Parameter	Maximum Annual Construction Impacts[a]	Annual Operations Impacts[b]
Employment (no.)		
Direct	263	44
Total	457	59
Income[c]		
Total	27.9	2.1
Direct state taxes[c]		
Sales	0.2	<0.1
Income	0.1	<0.1
BLM payments[c,d]		
Acreage-related fee	NA[e]	1.6
Capacity fee[f]	NA	11.7
In-migrants (no.)	112	6
Vacant housing[g] (no.)	39	3
Local community service employment		
Teachers (no.)	1	0
Physicians (no.)	0	0
Public safety (no.)	0	0

[a] Construction impacts were based on the development at the site in a single year; it was assumed that several facilities with a combined capacity of up to 667 MW (corresponding to 6,000 acres [24 km^2] of land disturbance) could be built.

[b] Operations impacts were based on full build-out of the site, producing a total output of 2,228 MW.

[c] Values are reported in $ million 2008.

[d] There is currently no individual income tax in Nevada; data provided are for workers who would reside in Utah.

[e] NA = not applicable.

[f] The BLM annual capacity payment was based on a fee of $5,256/MW, established by the BLM in its Solar Energy Interim Rental Policy (BLM 2010b), assuming full build-out of the site.

[g] Construction activities would affect vacant rental housing; operations activities would affect owner-occupied housing.

$0.1 million; direct income taxes in Utah would be less than $0.1 million. On the basis of fees established by the BLM in its Solar Energy Interim Rental Policy (BLM 2010b), acreage–related fees would be $1.6 million, and solar generating capacity fees would total at least $11.7 million.

As for the construction workforce, operation of a PV solar facility would likely require some in-migration of workers and their families from outside the ROI, with up to 6 persons in-migrating into the ROI. Although in-migration may potentially affect local housing markets, the relatively small number of in-migrants and the availability of temporary accommodations (hotels, motels, and mobile home parks) mean that the impact of solar facility operation on the number of vacant owner-occupied housing units would not be expected to be large, with up to 3 owner-occupied units expected to be required in the ROI.

No new community service employment would be required to meet existing levels of service in the ROI.

11.4.19.3 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 will reduce the potential for socioeconomic impacts during all project phases.

On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those analyses due to changes to the SEZ boundaries, and consideration of comments received as applicable, no SEZ-specific design features to address socioeconomic impacts 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.

11.4.20 Environmental Justice

11.4.20.1 Affected Environment

The data presented in the Draft Solar PEIS have changed because of the change in boundaries of the proposed Dry Lake Valley North SEZ. The affected environment information for environmental justice presented in the Draft Solar PEIS has also changed, as reflected in the following discussion.

The data in Table 11.4.20.1-1 show the minority and low-income composition of the total population located within a 50-mi (80-km) radius of the proposed Dry Lake Valley North SEZ based on 2000 Census data and CEQ guidelines (CEQ 1997). Individuals identifying themselves as Hispanic or Latino are included in the table as a separate entry. However, because Hispanics can be of any race, this number also includes individuals who also identify themselves as being part of one or more of the population groups listed in the table.

TABLE 11.4.20.1-1 Minority and Low-Income Populations within the 50-mi (80-km) Radius Surrounding the Proposed Dry Lake Valley North SEZ as Revised

Parameter	Nevada	Utah
Total population	6,240	5,523
White, non-Hispanic	5,378	5,015
Hispanic or Latino	387	264
Non-Hispanic or Latino minorities	475	244
One race	329	185
Black or African American	73	8
American Indian or Alaskan Native	211	151
Asian	18	15
Native Hawaiian or Other Pacific Islander	1	3
Some other race	26	8
Two or more races	146	59
Total minority	862	508
Low-income	754	865
Percentage minority	13.8	9.2
State percentage minority	17.2	15.9
Percentage low-income	12.8	15.0
State percentage low-income	10.5	9.4

Source: U.S Bureau of the Census (2009a,b).

Minority and low-income individuals are located in the 50-mi (80-km) area around the boundary of the SEZ. Within the 50-mi (80-km) radius in Nevada, 13.8% of the population is classified as minority, while 12.8% is classified as low income. However, the number of minority individuals does not exceed 50% of the total population in the area and does not exceed the state average by 20 percentage points or more; thus, in aggregate, there is no minority population in the SEZ area based on 2000 Census data and CEQ guidelines. The number of low-income individuals does not exceed the state average by 20 percentage points or more and does not exceed 50% of the total population in the area; thus, in aggregate, there are no low-income populations in the Nevada portion of the SEZ.

In the Utah portion of the 50-mi (80-km) radius, 9.2% of the population is classified as minority, while 15.0% is classified as low income. The number of minority individuals does not exceed 50% of the total population in the area and does not exceed the state average by 20 percentage points or more; thus, in aggregate, there is no minority population in the SEZ area based on 2000 Census data and CEQ guidelines. The number of low-income individuals does not exceed the state average by 20 percentage points or more and does not exceed 50% of the total

population in the area; thus, in aggregate, there are no low-income populations in the Utah portion of the SEZ.

Figure 11.4.20.1-1 shows the locations of the low-income population groups within the 50-mi (80-km) radius around the boundary of the SEZ.

At the individual block group level there are low-income populations in only one census block group, in Iron County west of Cedar City (including the towns of Newcastle and Modena), which has a low-income population that is more than 20 percentage points higher than the state average. There are no block groups in the 50-mi (80-km) area with low-income populations that exceed 50% of the total population. The number of minority individuals does not exceed the state average by 20 percentage points or more, or 50% of the total population, in any block group in the 50-mi (80-km) area.

11.4.20.2 Impacts

Environmental justice concerns common to all utility-scale solar energy facilities are described in detail in Section 5.18 of the Draft Solar PEIS. The potentially relevant environmental impacts associated with solar facilities within the proposed Dry Lake Valley North SEZ include noise and dust during the construction; noise and EMF associated with operations; visual impacts of solar generation and auxiliary facilities, including transmission lines; access to land used for economic, cultural, or religious purposes; and effects on property values as areas of concern that might potentially affect minority and low-income populations.

Potential impacts 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 to moderate; however, there are no minority populations defined by CEQ guidelines (CEQ 1997) (see Section 11.4.20.1 of the Draft Solar PEIS) within the 50-mi (80-km) radius around the boundary of the SEZ. This means that any adverse impacts of solar projects could not disproportionately affect minority populations. Because there are low-income populations within the 50-mi (80-km) radius, there could be impacts on low-income populations.

11.4.20.3 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 environmental justice impacts.

On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those analyses due to changes to the SEZ boundaries, and consideration of comments received as applicable, no SEZ-specific design features for environmental justice 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.

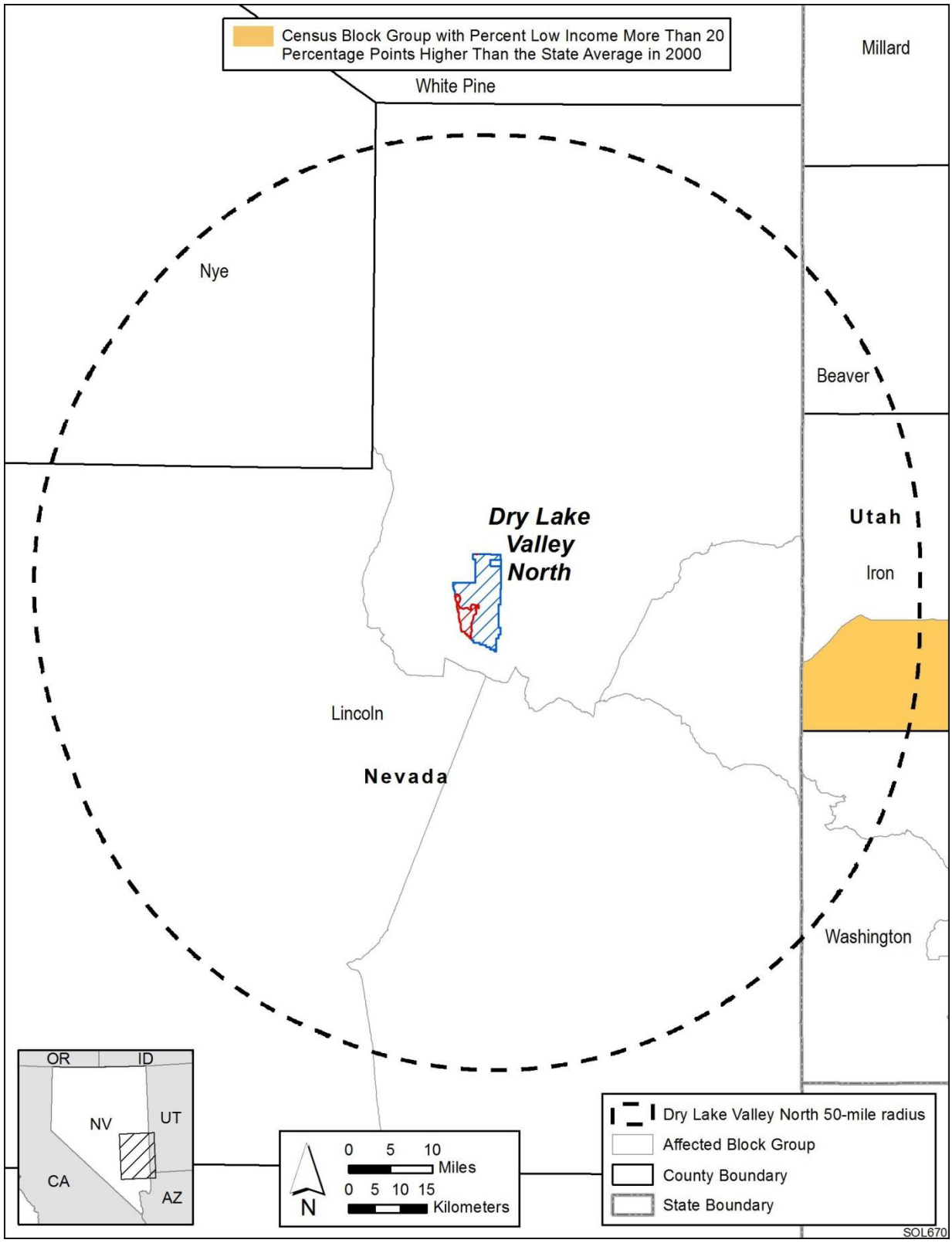

FIGURE 11.4.20.1-1 Low-Income Population Groups within the 50-mi (80-km) Radius Surrounding the Proposed Dry Lake Valley North SEZ as Revised

11.4.21 Transportation

11.4.21.1 Affected Environment

The reduction in developable area of the proposed Dry Lake Valley North SEZ does not change the information on affected environment provided in the Draft Solar PEIS

11.4.21.2 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. 93 would represent an increase in traffic of about a factor of 2 or 4, maximum, in the area of the SEZ for one or two projects, respectively. Because higher traffic volumes would be experienced during shift changes, traffic on either State Route 318 or U.S. 93 could experience moderate slowdowns during these time periods in the general area of the SEZ. Local road improvements would be necessary on State Route 318 or U.S. 93 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.

11.4.21.3 SEZ-Specific Design Features and Design Feature Effectiveness

Required programmatic design features that would reduce transportation impacts 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, updates to those analyses due to changes to the SEZ boundaries, and consideration of comments received as applicable, no SEZ-specific design features to address transportation impacts 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.

11.4.22 Cumulative Impacts

The analysis of potential impacts in the vicinity of the proposed Dry Lake Valley North SEZ presented in the Draft Solar PEIS is still generally applicable for this Final Solar PEIS, although the impacts would decrease because the size of the developable area of the proposed SEZ has been reduced to 25,069 acres (116.3 km^2). The following sections include an update to the information presented in the Draft Solar PEIS regarding cumulative effects for the proposed Dry Lake Valley North SEZ.

11.4.22.1 Geographic Extent of the Cumulative Impact Analysis

The geographic extent of the cumulative impact analysis has not changed. The extent varies on the basis of 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). Most of the lands around the SEZ are administered by the BLM, the USFWS, or the DoD. The BLM administers approximately 93.8% of the lands within a 50-mi (80-km) radius of the SEZ.

11.4.22.2 Overview of Ongoing and Reasonably Foreseeable Future Actions

The proposed Dry Lake Valley North SEZ decreased from 76,874 acres (116.3 km^2), and an additional 3,657 acres (14.8 km^2) within the SEZ were identified as non-development areas. 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.

There is only one pending ROW application for a solar facility within 50 mi (80 km) of the proposed SEZ. The application is for a 7,680-acre (31-km^2), 180-MW power tower facility located about 15 mi (24 km) to the southwest of the SEZ. This solar facility is not currently considered reasonably foreseeable, because there are no firm near-term plans and environmental documentation has not been completed.

11.4.22.2.1 Energy Production and Distribution

The list of reasonably foreseeable future actions that relate to energy production and distribution, including potential solar energy projects, under the proposed action near the proposed Dry Lake Valley North SEZ has been updated and is presented in Table 11.4.22.2-1. Projects listed in the table are shown in Figure 11.4.22.2-1.

Wilson Creek Wind Project

Wilson Creek Wind Company, LLC, proposes to construct and operate a 990-MW wind-powered generation facility on approximately 31,000 acres (125 km^2) of land administered by the BLM. The site is located approximately 20 mi (32 km) northeast of Pioche, Nevada, and

TABLE 11.4.22.2-1 Ongoing and Reasonably Foreseeable Future Actions Related to Energy Development and Distribution near the Proposed Dry Lake Valley North SEZ as Revised[a]

Description	Status	Resources Affected	Primary Impact Location
Renewable Energy Development			
Wilson Creek Wind Project 990 W, 32,000 acres	**NOI May 27, 2011; EIS Public Scoping Summary Report[b]; Project has been terminated**	**Terrestrial habitats, wildlife, recreation, socioeconomics**	**About 23 mi (37 km) northeast of the SEZ**
Transmission and Distribution Systems			
Southwest Intertie Project	FONSI July 30, 2008; **FEIS January 2010[c]; under construction; expected first operation 2012**	Disturbed areas, terrestrial habitats along transmission line ROW	Corridor passes through the SEZ
One Nevada Transmission Line Project	**ROD March 1, 2011[d]**	Disturbed areas, terrestrial habitats along transmission line ROW	Corridor passes through the SEZ
Zephyr and Chinook Transmission Line Project	**Permit applications Jan. 28, 2011[e]**	Disturbed areas, terrestrial habitats along transmission line ROW	Corridor passes near or through the SEZ

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

[b] See BLM (2011c) for details.

[c] See Western (2010) for details.

[d] See BLM (2011d) for details

[e] See TransCanada (2011) for details.

about 23 mi (37 km) northeast of the SEZ. The project would consist of up to 350 wind turbines (BLM 2011c). The BLM work to process ROW applications for this project has been terminated at the request of the proponents.

11.4.22.2.2 Other Actions

The list of other reasonably foreseeable future actions near the proposed Dry Lake Valley North SEZ has been updated and is presented in Table 11.4.22.2-2.

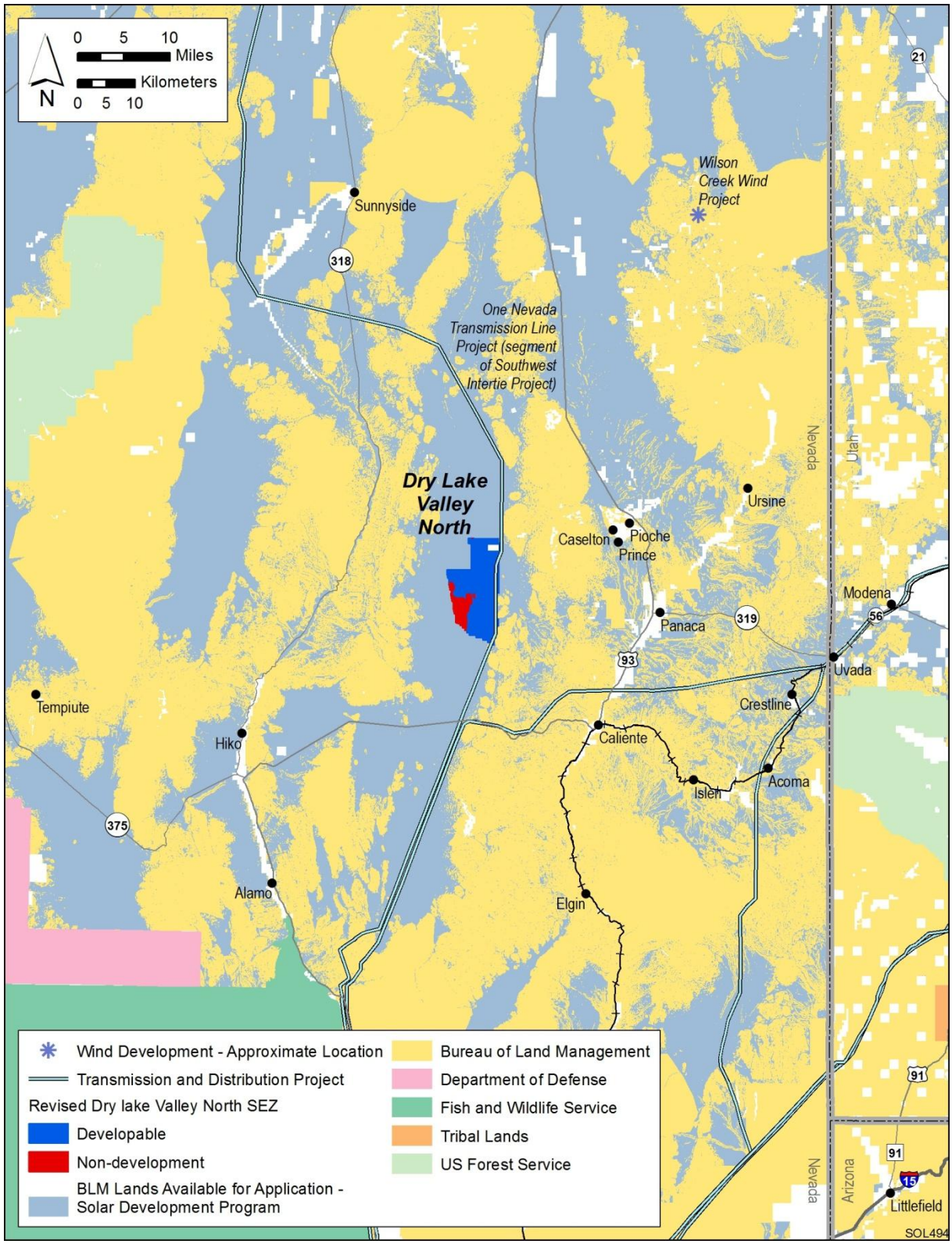

FIGURE 11.4.22.2-1 Locations of Existing and Reasonably Foreseeable Renewable Energy Projects on Public Land within a 50-mi (80-km) Radius of the Proposed Dry Lake Valley North SEZ as Revised

TABLE 11.4.22.2-2 Other Ongoing and Reasonably Foreseeable Actions near the Proposed Dry Lake Valley North SEZ as Revised[a]

Description	Status	Resources Affected	Primary Impact Location
Alamo Industrial Park and Community Expansion	Preliminary Design Report January 2000	Terrestrial habitats, wildlife, socioeconomics	35 mi[h] southwest of the SEZ
Arizona Nevada Tower Corporation Communication Sites	EA April 2007	Terrestrial habitats, wildlife, cultural resources	East, west, and southwest of the SEZ
Ash Canyon Sagebrush Restoration and Fuels Reduction Project	**FONSI July 29, 2010[b]**	Terrestrial habitats, wildlife	25 mi southeast of the SEZ
Caliente Rail Alignment	FEIS June 2008	Terrestrial habitats, wildlife cultural resources	Passes through the SEZ
Clark, Lincoln, and White Pine Counties Groundwater Development Project	**Draft EIS June 2011[c]** A ruling was issued on March 22, 2012, granting SNWA 61,127 ac-ft/yr from Spring Valley and 22,861 ac-ft/yr from Delamar, Dry Lake, and Cave Valleys.[c]	Terrestrial habitats, wildlife, groundwater	Within the SEZ
Eagle Herd Management Area Wild Horse Gather	**Completed[d]**	Terrestrial habitats, wildlife	East of the SEZ
Lincoln County Land Act Groundwater Development and Utility ROW	Final EIS May 2009; ROD January 2010	Terrestrial habitats, wildlife, groundwater	Southeast of the SEZ
Meadow Valley Industrial Park	Completed	Terrestrial habitats, wildlife, socioeconomics	14 mi southeast of the SEZ
NV Energy Microwave and Mobile Radio Project	**FONSI August 27, 2010[e]**	Terrestrial habitats, wildlife cultural resources	Two of the sites are 40 mi west of SEZ; one site is 50 mi northwest of SEZ
Patriot Communication Exercises in Lincoln County	**BLM FONSI June 6, 2008[f]; USAF FONSI August 25, 2008[f]**	Terrestrial habitats, wildlife, soils	East, south, and west of the SEZ

TABLE 11.4.22.2-2 (Cont.)

Description	Status	Resources Affected	Primary Impact Location
Pioche/Caselton Wildland Urban Interface Project	**FONSI July15, 2010[g]**	Terrestrial habitats, wildlife	East of the SEZ
Silver King Herd Management Area Wild Horse Gather	**Completed[d]**	Terrestrial habitats, wildlife	In and around the SEZ
U.S. 93 Corridor Wild Horse Gather	**Completed[d]**	Terrestrial habitats, wildlife	East of the SEZ

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

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

[c] See BLM (2011e) and SNWA (2012b) for details.

[d] See BLM (2012b) for details.

[e] See BLM (2011f) for details.

[f] See USAF (2008) for details.

[g] See BLM (2010d) for details.

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

11.4.22.3 General Trends

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

11.4.22.4 Cumulative Impacts on Resources

Total disturbance in the proposed Dry Lake Valley North SEZ over 20 years is assumed to be about 20,055 acres (81.2 km^2) (80% of the developable area of the 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 Dry Lake Valley North SEZ may include impacts on water quantity and quality, air quality, ecological resources such as habitat and species, cultural and visual resources, and specially designated lands.

Activities in the region that will contribute to cumulative impacts include one additional project within 50 mi (80 km) of the Dry Lake Valley North SEZ that was not considered foreseeable at the time the Draft Solar PEIS was prepared: the Wilson Creek Wind Project (990 MW). This project was identified in Table 11.4.22.2-2 of the Draft Solar PEIS as pending development.

Overall, the incremental cumulative impacts associated with development in the proposed Dry Lake Valley North SEZ during construction, operation, and decommissioning are expected to be the same as or less than those discussed in the Draft Solar PEIS. This is because the size of the Dry Lake Valley North SEZ has decreased by more than half from that presented in the Draft Solar PEIS, thereby reducing the incremental contribution to cumulative impacts from the SEZ.

11.4.23 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 Dry Lake Valley North SEZ, 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 11.4.2 through 11.4.22, this section is not an update of previous analysis for the Dry Lake Valley North 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 Dry Lake Valley North 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 Dry Lake Valley North SEZ is estimated to have the potential to generate 4,011 MW of marketable solar power at full build-out.

11.4.23.1 Identification and Characterization of Load Areas

The primary candidates for Dry Lake Valley North SEZ load areas are the major surrounding cities. Figure 11.4.23.1-1 shows the possible load areas for the Dry Lake Valley North SEZ and the estimated portion of their market that could be served by solar generation. Possible load areas for the Dry Lake Valley North 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 groups examined for the Dry Lake Valley North SEZ are as follows:

1. Los Angeles, California; and

2. Reno, Nevada; Sacramento, Oakland, San Francisco, and San Jose, California; Salt Lake City, Utah; and Phoenix, Arizona.

Figure 11.4.23.1-2 shows the most economically viable load groups and transmission scheme for the Dry Lake Valley North SEZ (transmission scheme 1), and Figure 11.4.23.1-3 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

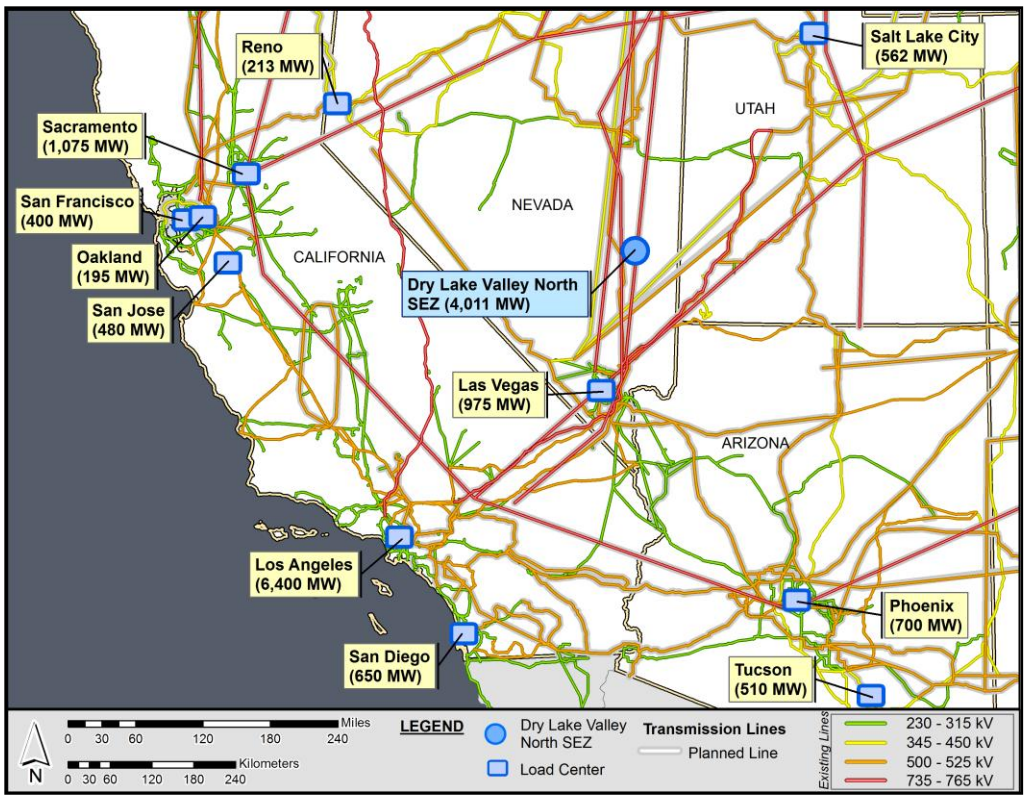

FIGURE 11.4.23.1-1 Location of the Proposed Dry Lake Valley North SEZ and Possible Load Areas (Source for background map: Platts 2011)

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 4,011 MW could be fully allocated.

Table 11.4.23.1-1 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.

11.4.23.2 Findings for the DLT Analysis

The DLT analysis approach assumes that the Dry Lake Valley North SEZ will require all new construction for transmission lines (i.e., dedicated lines) and substations. The new transmission lines(s) would directly convey the 4,011-MW output of the Dry Lake Valley North 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.

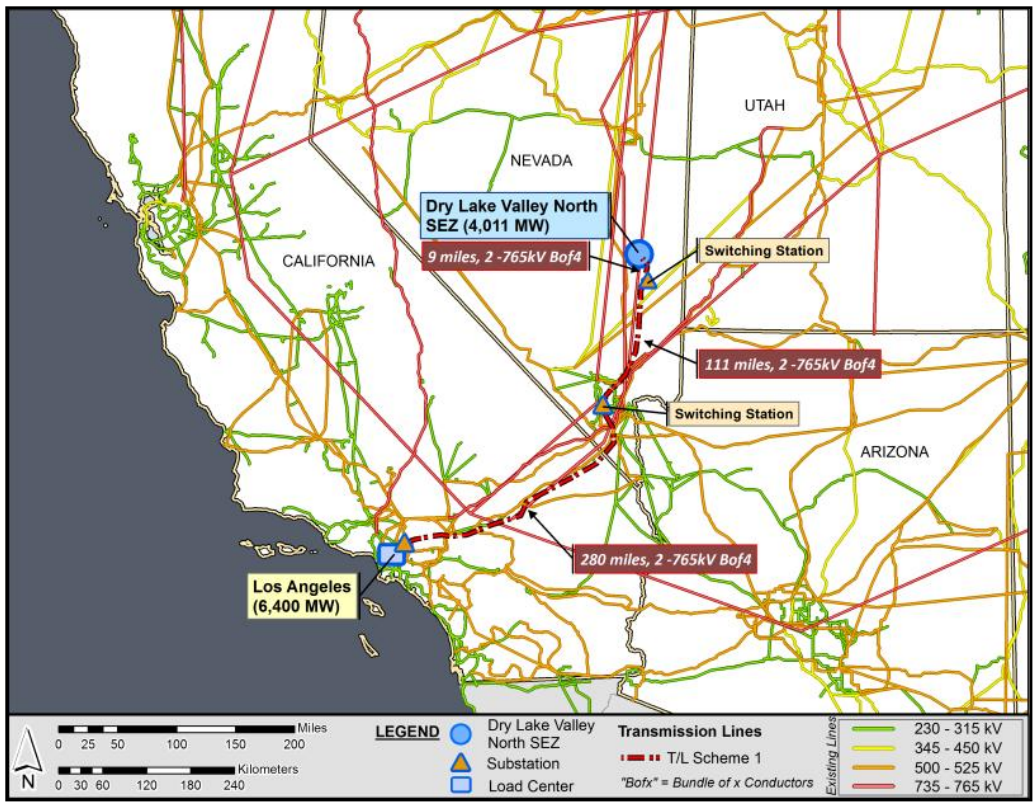

FIGURE 11.4.23.1-2 Transmission Scheme 1 for the Proposed Dry Lake Valley North SEZ (Source for background map: Platts 2011)

Figures 11.4.23.1-2 and 11.4.23.1-3 display the pathways that new dedicated lines might follow to distribute solar power generated at the Dry Lake Valley North SEZ via the two identified transmission schemes described in Table 11.4.23.1-1. These pathways parallel existing 500-kV, 345-kV, and/or 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 4,011-MW output of the Dry Lake Valley North SEZ could be fully utilized (Figure 11.4.23.1-2). This particular scheme has three segments. The first segment extends about 9 mi (14 km) from the SEZ to the first switching station. 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 is about 111 mi (179 km) long and runs from the first switching station to the second switching station located in Las Vegas. The third and final segment goes to Los Angeles, traversing a distance of about 280 mi (451 km). In general, 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.

FIGURE 11.4.23.1-3 Transmission Scheme 2 for the Proposed Dry Lake Valley North SEZ (Source for background map: Platts 2011)

For transmission scheme 2, serving load centers to the northwest, northeast, and southwest, Figure 11.4.23.1-3 shows that new lines would be constructed to the northwest to connect with Reno (213 MW), Sacramento (1,075 MW), San Francisco (400 MW), Oakland (195 MW), and San Jose (480 MW), so that the 4,011-MW output of the Dry Lake Valley North SEZ could be fully utilized. This scheme would also require construction of a new line extending from Las Vegas to the southeast to Phoenix and another new line to the northeast to Salt Lake City. This scheme has a total of nine segments. The first segment extends 9 mi (14 km) from the SEZ to the first switching station. On the basis of engineering and operational considerations, this segment would require a double-circuit 765-kV (2–765 kV) line with a bundle of four (Bof4) conductors transmission line design. The second segment is about 111 mi (179 km) long and runs from the first switching station to the second switching station located in Las Vegas. This segment would likewise require a double-circuit 765-kV line (2–765 kV) with a bundle of four conductors. The third segment extends to the northwest from Las Vegas to Reno over a distance of 385 mi (620 km). A line configuration consisting of a double-circuit, 765-kV bundle of four is required for this segment. The fourth segment goes from Reno 104 mi (167 km) to the third switching station near Sacramento. This segment would have a line design consisting of a double-circuit 500-kV (2–500kV) line with a bundle of three (Bof3) conductors. The fifth segment extends 23 mi (37 km) and joins the switching station with Sacramento. This segment would require a double-circuit 345-kV (2–345 kV) line with a bundle of two conductors. The sixth, seventh, and eighth segments extend to serve the cities of Oakland, San Francisco, and

TABLE 11.4.23.1-1 Candidate Load Area Characteristics for the Proposed Dry Lake Valley North 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	Los Angeles, California[a]	Southwest	12,800,000	32,000	6,400
2	Las Vegas, Nevada[a]	Southwest	1,950,000	4,875	975
	Reno, Nevada[a]	Northwest	425,000	1,063	213
	Sacramento, California[a]	Northwest	2,150,000	5,375	1,075
	Oakland, California[b]	West	390,000	975	195
	San Francisco, California[b]	West	800,000	2,000	400
	San Jose, California[b]	West	960,000	2,400	480
	Phoenix, Arizona[b]	Southwest	1,400,000	3,500	700
	Salt Lake City, Utah[a]	Northeast	1,124,000	2,810	562

[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).

San Jose, over distances of 98 mi (158 km), 12 mi (19 km), and 40 mi (64 km), respectively. The required configuration would be 2–345 kV Bof2, 1–345 kV Bof2, and 1–345 kV Bof2, respectively. The ninth segment connects with Salt Lake City, covering a distance of about 387 mi (623 km), and uses a 1–230 kV Bof1 configuration. The tenth and final segment goes to Phoenix from Las Vegas, traversing a distance of about 294 mi (473 km). This segment would require a 2–345 kV Bof2 line configuration.

Table 11.4.23.2-1 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 would 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 4,011 MW (to match the plant's output), while the combined load substations would have a similar total rating of 4,011 MW. For schemes that require branching of the lines, 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 11.4.23.2-1 Potential Transmission Schemes, Estimated Solar Markets, and Distances to Load Areas for the Proposed Dry Lake Valley North SEZ

Transmission Scheme	City/Load Area Name	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	Los Angeles, California[a]	6,400	6,400	400	400	765	4
2	Las Vegas, Nevada[a]	975	4,600	120	1,463	765,	11
	Reno, Nevada[a]	213		385		500,	
	Sacramento, California[a]	1,075		127		345, 230	
	San Francisco, California[b]	400		12			
	Oakland, California[b]	195		98			
	San Jose, California[b]	480		40			
	Phoenix, Arizona[b]	700		294			
	Salt Lake City, Utah[a]	562		387			

[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 11.4.23.1-1.

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

Table 11.4.23.2-2 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 9,986 acres (40.4 km^2) of land. The less favorable transmission scheme with respect to minimizing costs and the area disturbed would be scheme 2, which serves Las Vegas, multiple load areas in California, and Phoenix. For this scheme, the construction of new transmission lines and substations is estimated to disturb a land area on the order of 31,916 acres (129.2 km^2).

Table 11.4.23.2-3 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 and includes the Reno, Sacramento, San Francisco, San Jose, Oakland, Salt Lake City, and

TABLE 11.4.23.2-2 Comparison of the Various Transmission Line Configurations with Respect to Land Use Requirements for the Proposed Dry Lake Valley North SEZ

Transmission Scheme	City/Load Area Name	Total Distance (mi)[c]	No. of Substations	Land Use (acres)[d]		
				Transmission Line	Substation	Total
1	Los Angeles, California[a]	400	4	9,697.0	288.6	9,985.6
2	Las Vegas, Nevada[a] Reno, Nevada[a] Sacramento, California[a] San Francisco, California[b] Oakland, California[b] San Jose, California[b] Phoenix, Arizona[b] Salt Lake City, Utah[a]	1,463	11	31,670	246.1	31,916

[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.

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

Table 11.4.23.2-4 shows the effect of varying the value of the utilization factor on the NPV of the transmission schemes. It also shows that as the utilization factor is increased, the economic viability of the lines also 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 Dry Lake Valley North 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 9,986 acres (40.4 km^2).

- Transmission scheme 2 represents an alternative configuration and serves Las Vegas, multiple load areas in California, Salt Lake City, and Phoenix. This configuration would result in new land disturbance of about 31,916 acres (129.2 km^2).

TABLE 11.4.23.2-3 Comparison of Potential Transmission Lines with Respect to NPV (Base Case) for the Proposed Dry Lake Valley North 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	Los Angeles, California[a]	2,250.0	264.7	702.7	5,426.3	2,911.5
2	Las Vegas, Nevada[a] Reno, Nevada[a] Sacramento, California[a] San Francisco, California[b] Oakland, California[b] San Jose, California[b] Phoenix, Arizona[b] Salt Lake City, Utah[a]	4,861.3	264.7	702.7	5,426.3	300.2

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

[b] The load area represents the city named.

TABLE 11.4.23.2-4 Effects of Varying the Utilization Factor on the NPV of the Transmission Schemes for the Proposed Dry Lake Valley SEZ

Transmission Scheme	City/Load Area Name	NPV ($ million) at Different Utilization Factors					
		20%	30%	40%	50%	60%	70%
1	Los Angeles, California[a]	2,911.6	5,624.7	8,337.8	11,051.0	13,764.1	16,477.2
2	Las Vegas, Nevada[a] Reno, Nevada[a] Sacramento, California[a] San Francisco, California[b] Oakland, California[b] San Jose, California[b] Phoenix, Arizona[b] Salt Lake City, Utah[a]	300.2	3,013.3	5,726.5	8,439.6	11,152.8	13,865.9

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

[b] The load area represents the city named.

- 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 Dry Lake Valley North SEZ is not sent to either of the two markets identified above, the potential upper-bound impacts in terms of cost would be greater.

- The analysis of transmission requirements for the proposed Dry Lake Valley North 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 Las Vegas, multiple load areas in California, Salt Lake City, and Phoenix, increasing the solar-eligible load assumption could result in significantly lower cost and land disturbance estimates, because it is likely that fewer load areas would be needed to accommodate the SEZ's capacity.

11.4.24 Impacts of the Withdrawal

The BLM is proposing to withdraw 28,726 acres (117 km^2) of public land comprising the proposed Dry Lake Valley North 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 this 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 Dry Lake Valley North 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 2012a). 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 Dry Lake Valley North 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 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).

11.4.25 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 the URL addresses may have changed. The original information has been retained and is available through the Public Information Docket for this Final Solar PEIS.

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11.4.26 Errata for the Proposed Dry Lake Valley North 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 Supplement to the Draft, or through additional review of the original material by the authors. Table 11.4.26-1 provides corrections to information presented in the Draft Solar PEIS and the Supplement to the Draft.

TABLE 11.4.26-1 Errata for the Proposed Dry Lake Valley North SEZ (Section 11.4 of the Draft Solar PEIS and Section C.4.3 of the Supplement to the Draft Solar PEIS)

Section No.	Page No.	Line No.	Figure No.	Table No.	Correction
11.4.2.1	11.4-19	14			The reference to "U.S. 95" should be to "U.S. 93."
11.4.9.1.3	11.4-63	11–13			"This amount of water represents the remaining amount of unappropriated water within the Dry Lake Valley Basin, less 50 ac-ft/yr that would be reserved for future use within the basin," should read, "Rulings 5875 and 5993 result in the Dry Lake Valley groundwater basin being fully allocated with 50 ac-ft/yr being reserved for future use."
11.4.9.2.4	11.4-68	29–30			"The NDWR (2008) has declared that there are 11,584 ac-ft (14 million m3/yr) of water available annually in the basin for beneficial uses," should read, "The NDWR set the perennial yield to 12,700 ac-ft/yr (15.7 million m^3/yr), with 11,584 ac-ft/yr (14 million m^3/yr) being allocated to the SNWA."
11.4.9.2.4	11.4-68	38–46			This paragraph describing a solar development scenario based on a limitation of 11,584 ac-ft/yr should be ignored. While this was a hypothetical analysis, its basis on the SNWA's water allocation that is under review is not an appropriate value representing available water in Dry Lake Valley.
11.4.11.2					All uses of the term "neotropical migrants" in the text and tables of this section should be replaced with the term "passerines."
11.4.17.1.3	11.4.259	33–42			This text should read "It was necessary to construct intrastate rail lines to move ore from mines to mills; the Pioche to Bullionville Railroad had been the closest line to the proposed SEZ before it was discontinued, but interstate railroads were also critical to the development of the economy. The San Pedro-Los Angeles-Salt Lake Railroad was constructed in 1905, connecting two of the most populous cities in the American West. This still-used rail line is located to the east of the proposed Dry Lake Valley North SEZ. The infamous Transcontinental Railroad was constructed between 1863 and 1869, connecting Sacramento, California, and Omaha, Nebraska, passing through the Nevada towns of Reno, Wadsworth, Winnemucca, Battle Mountain, Elko, and Wells on its way to changing the manner in which people traversed the United States."

TABLE 11.4.26-1 (Cont.)

Section No.	Page No.	Line No.	Figure No.	Table No.	Correction
11.4.21.1	11.4-303	23			The sentence "The railroad has a stop along this route in Caliente, 25 mi (40 km) south of Pioche on U.S. 93." should read, "The nearest rail access along this route is in Caliente, 25 mi (40 km) south of Pioche on U.S. 93."
	11.4-305		11.4.21.1-1		The railroad shown in Figure 11.4.21.1-1 between Caliente and Prince in the Draft Solar EIS should be removed from the figure as this spur rail line is no longer operational.
11.4.22	11.4-307	16			The estimate of population for the Castleton and Pioche areas of 2,111 in the Draft Solar PEIS may be too high. The Nevada State Demographer lists only 836 persons in Pioche in 2009 and does not even provide an estimate of population for Castleton given its very small size (perhaps 1 to 2 dozen homes) (http://nvdemography.org/data-and-publications/estimates/estimates-by-county-city-andunincorporated-towns/). The word "few" should be replaced with "no," regarding the number of persons residing in Dry Lake Valley.
11.4.22.2.2	11.4-314	27			The word "Count" should be "County."
11.4.22.2.2	11.4-316	11			"and western Utah" should be removed from the following statement: *Clark, Lincoln, and White Pine Counties Groundwater Development Project.* The Southern Nevada Water Authority (SNWA) proposes to construct a groundwater development project that would transport approximately 122,755 ac-ft/yr (151 million m^3/yr) of groundwater under existing water rights and applications from several hydrographic basins in eastern Nevada and western Utah.
11.4.22.2.2	11.4-316	36-44			The text should indicate that only one of the four parcels was planned for transfer to Lincoln County and the County purchased said parcel from the BLM 3 years ago. One of the other parcels was sold at auction to a private party 2 years ago.

TABLE 11.4.26-1 (Cont.)

Section No.	Page No.	Line No.	Figure No.	Table No.	Correction
11.4.22.3.3	11.4-320	3-7			The current text should be replaced with: "However, this water right allocation has been vacated upon judicial review, and the SNWA Dry Lake Valley applications will be reconsidered by NDWR. Concerned parties and the SNWA could present new information about the groundwater basin, and thus the NDWR could alter its previous assessment of water availability in the basin."

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